

THE J. E. M. GUIDE



TO DAVOS PLATZ.

"For completeness neither Murray nor the much vaunted Baedeker can beat it, while it is only half the price of its older established rivals. To our mind it has even a stronger claim to support than this excellent quality of cheapness, for it is the production of an Englishman, and all the labour employed upon it is English ; while Baedeker's Guide is not only the production of a German, but is mainly, if not wholly produced in Germany. This fact alone ought to be a recommendation for Mr. Muddock's book, seeing how the foreigner is intruding upon us in every walk of life."—*Keble's Ramsgate and Margate Gazette, Sept. 24th, 1887.*

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THE "J. E. M." GUIDE

TO

DAVOS-PLATZ.

Edited by J. E. Muddock, F.R.G.S. Editor of the "J. E. M."
Guide to Switzerland.

Fourth Edition, Tenth Year of Publication.

Published by Simpkin, Marshall, Hamilton, Kent & Co., Limited.

Opinions of the Press.

LONDON TIMES.

"The present volume gives ample information on this now famous invalid Alpine resort. All the points that invalids are naturally anxious about are referred to, and Mr. Muddock speaks with commendable honesty of the hotels of the place. The volume may be safely commended to the notice of those who think of trying the Alpine air of Davos-Platz as a means of nipping the insidious disease in the bud."

SATURDAY REVIEW.

"Mr. Muddock's little work, which is *à propos* of the increasing popularity of Davos-Platz as a winter resort for consumptive patients, contains a full account of the place and its properties. . . . In the interests of invalids Mr. Muddock makes a protest, which is probably not too strong, against the employment of German stoves in the Davos hotels."

LONDON DAILY CHRONICLE.

"The tendency of his interesting little book is in favour of patients who have not sunk too low to be cured, giving a trial to the dry, bracing, and tonic air of Davos-Platz."

ACADEMY.

"The chief value of Mr. Muddock's book, apart from its mere guide book information, consists in the analytical notes on the food and water, furnished by Mr. Philip Holland. There are also some trustworthy meteorological tables."

PALL MALL GAZETTE.

"Mr. Muddock regards the famous health resort from a practical point of view, and tells us all about it, about the climate, about the hotels, their convenience and their cost; about the medical attendance—in short, about everything that one needs to know."

PUBLISHERS' CIRCULAR.

"The now famous Alpine winter station is described, with frontispiece giving a summer view of the locality, a map of the route to Davos, climatic tables of the winter months, &c. An enumeration of the various contents of this handbook will be our most practical notice. . . ."

LITERARY WORLD.

"If all be true that is set forth in this handbook, and we have no reason to doubt it, there are surely hundreds of consumptives who will rejoice to hear of such a delightfully healthy winter resort."

SOCIAL NOTES.

"The Continental as well as the British public may cordially thank Mr. Muddock for this little book on Davos-Platz. Its great charm is its fearless honesty. The author is not a mere book maker, he has not followed in the conventional guide book groove, but he is evidently anxious to place before the public the claims, and only the genuine claims of Davos-Platz as a winter station. . . . An excellent map and a plate giving a summer view of Davos, add much to the interest of Mr. Muddock's charming little book, which is a valuable addition to guide book literature, and which should be studied by all intending visitors to Davos-Platz."

OXFORD AND CAMBRIDGE UNDERGRADUATES' JOURNAL.

"The descriptive portion of the work is graphic, and the book is enriched with an illustration and a map. We can commend a perusal of it to those who are beginning to feel the severities of an English winter."

LIVERPOOL WEEKLY ALBION.

"Mr. Muddock has certainly succeeded in condensing all the information that can possibly be demanded by patients intending to visit Davos into a readable handbook. As a mere handbook the volume is sufficiently valuable; it contains an admirable map, and even a glossary of words and phrases the visitor may require, if he unfortunately should be hopelessly ignorant of German."

LIVERPOOL DAILY COURIER.

"The book treats pleasantly of hotels, amusements, natural productions, meteorology, topography, and, indeed, of every subject likely to interest and instruct intending visitors to the Alpine Village."

SHEFFIELD TELEGRAPH.

"Mr. Muddock has not only written a most pleasant account of the hotels, the amusements, and the climate of this healthful winter resort, but with the scientific assistance of Mr. Philip Holland he has produced a guide, which, for its completeness and its accuracy, leaves nothing to be desired."

NEWCASTLE WEEKLY CHRONICLE.

"Davos-Platz is a little book that ought to be read by consumptive patients, in whose interest it is written."

MANCHESTER COURIER.

"This little volume is a popular guide book to the pretty Alpine Village. . . . It seems to be very carefully and fully done, and likely to be extremely useful. Mr. Holland's analyses of food and water can, as the author says, scarcely fail to prove valuable to the medical profession and to scientific men, and they will certainly add to the confidence of English visitors."

GLASGOW EVENING NEWS.

"We have just received a very handy book by Mr. J. E. Muddock, giving information that will be of great use to persons who are going to the place, or those on the outlook for a pleasant winter residence for the good of their health."

DUNDEE COURIER AND ARGUS

"In drawing public attention to Davos-Platz as a winter health resort, Mr. Muddock has done good service to such invalids as medical advisers may recommend to spend the winter in Alpine regions. He gives a complete account of the place in all its aspects, physical and sanitary, and his information may be relied upon as accurate and trustworthy."

"FROM THE BOSOM OF THE DEEP."

(Swan Sonnenschein & Co.)

By J. E. MUDDOCK, F.R.G.S.,

Author of "A WINGLESS ANGEL," "AS THE SHADOWS FALL," "JOHN
JERLABY'S HOUSEKEEPER," "THE MYSTERY OF JASPER JANIN,"

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OPINIONS OF THE PRESS.

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"The story is well told, and shows considerable inventive ability."

"WHITEHALL REVIEW," July 22nd, 1866.

"A CLEVER NOVELIST."

"Mr. MUDDOCK has written a delightful book. In it he gives an adequate and admirable study of a man whose nature is rotten at the core, and who is as fond of evil deeds as a child is of bonbons; and he traces his career, step by step, ever downward, from the time when the child gives indication of what the man will be, till the man himself is laid bare in all his glaring sin before the eyes of the doting old man, who believed almost to the last that his son was an honest, straightforward fellow. But it is not only in this sense that the book is delightful. It is because it fulfils every purpose that a novel should fulfil. The opening chapter enchains the reader's attention, who discovers that he has got a book which is very much above the average, and which is likely to prove a distraction in more serious moments, when the mind should not, but will infallibly, dwell on the elucidation of the mystery concerning the birth and discovery of 'Stormy Petrel'; the origin of the wreck of the vessel whose name was painted out; and whether Dr. Shadwell will succeed in his purpose of making Mr. Vavasour care for him. Until the end of the story there can be no peace for the reader, who, if he cannot devote a day to its perusal, must leave off at some critical point, and remain on tenterhooks until such a

lucky moment as that in which he can again take up the thread of the story. Louis Stevenson—the great and the unapproachable in the art of thrilling description!—never penned a finer page than the one which describes the men of the *Pearl* boarding the deserted ship, and what they found thereon; and no matter what subject the author takes in hand—be it mercantile life in Liverpool, life on board ship, or life in India—he proves himself beyond doubt to be past-master of the art of conveying solid impressions to his readers, and of having the unmistakable gift of writing, which after all is *nascitur non fit*. He draws his characters with a power of individualism which marks the born novelist, and writes so vividly that he proclaims himself at the outset to be a man of peculiar genius. He never offends against decency, but keeps ever before his mind that the fiction-reading public is composed of ‘all sorts and conditions of men,’ who take up a novel for pure amusement or distraction, and not to have their finer feelings outraged. The only unpleasant fact he presents to his readers cannot offend their senses, because it is put artistically, and there is not from the first page to the last (except the one fact) one word at which the most captious could quibble. Surely nowadays that alone should earn for Mr. Muddock’s clever book a success of more than nine days’ duration.”

“ACADEMY,” August, 7th, 1886.

“‘From the Bosom of the Deep’ is a very stirring tale, and Mr. Muddock has been especially successful in his thrilling incidents of the sea. . . . The whole is certainly most readable and entertaining. . . . Whatever else may be said, Mr. Muddock is the very antithesis of a dull writer.”

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“A tale of the inexhaustable sea so full of incident and so lightly written would deserve a reading were it less meritorious than the present one.”

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“‘From the Bosom of the Deep’ is a thrilling tale of the sea that cannot fail to take a strong hold upon the least imaginative reader. The straight-forward simplicity with which it is told contributes much to the effect produced by the dark tragedy that forms its climax, which is led up to in an unaffected but impressive manner. In the space of one moderate-sized volume this tale contains enough of startling incident to suffice for half-a-dozen novels.”

“SCOTSMAN,” July 16th, 1886.

“A novel eminently worth reading. It is a story of incident, and the reader will find his attention thoroughly engrossed by it. The plot is excellent, and the writer shows again and again that he knows how to tell a story with force and vigour.”

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“Isaac Greth is finely drawn, and the story is altogether a very readable and enjoyable one.”

Opinions of the Press.

"YORKSHIRE POST," September 8th, 1886.

"Nor is it possible not to feel something more than a passing interest in the self-devotion of the old German millionaire, whose portrait is drawn with a skill and power that of itself would raise the book far above the level of the commonplace."

"DERBYSHIRE TIMES."

"During a recent idle fortnight, I have read through, for a second time, a book written by J. E. Muddock entitled 'From the Bosom of the Deep.' It is one of the best the author has ever written. He is a keen observer of nature as well as character."

"NEWCASTLE CHRONICLE."

"This is a novel of more than average merit. . . . The story is a good one, full of incidents and interest."

"BIRMINGHAM DAILY POST."

"This novel is bright in style, vigorous in narrative, and attractive in plot. . . . The characters are not merely figures, but such men and women as one meets in ordinary life. . . . Mr. Muddock in this as in his former novels writes in a clear, pleasant, and vigorous style."

"LONDON FIGARO," July 31st, 1886.

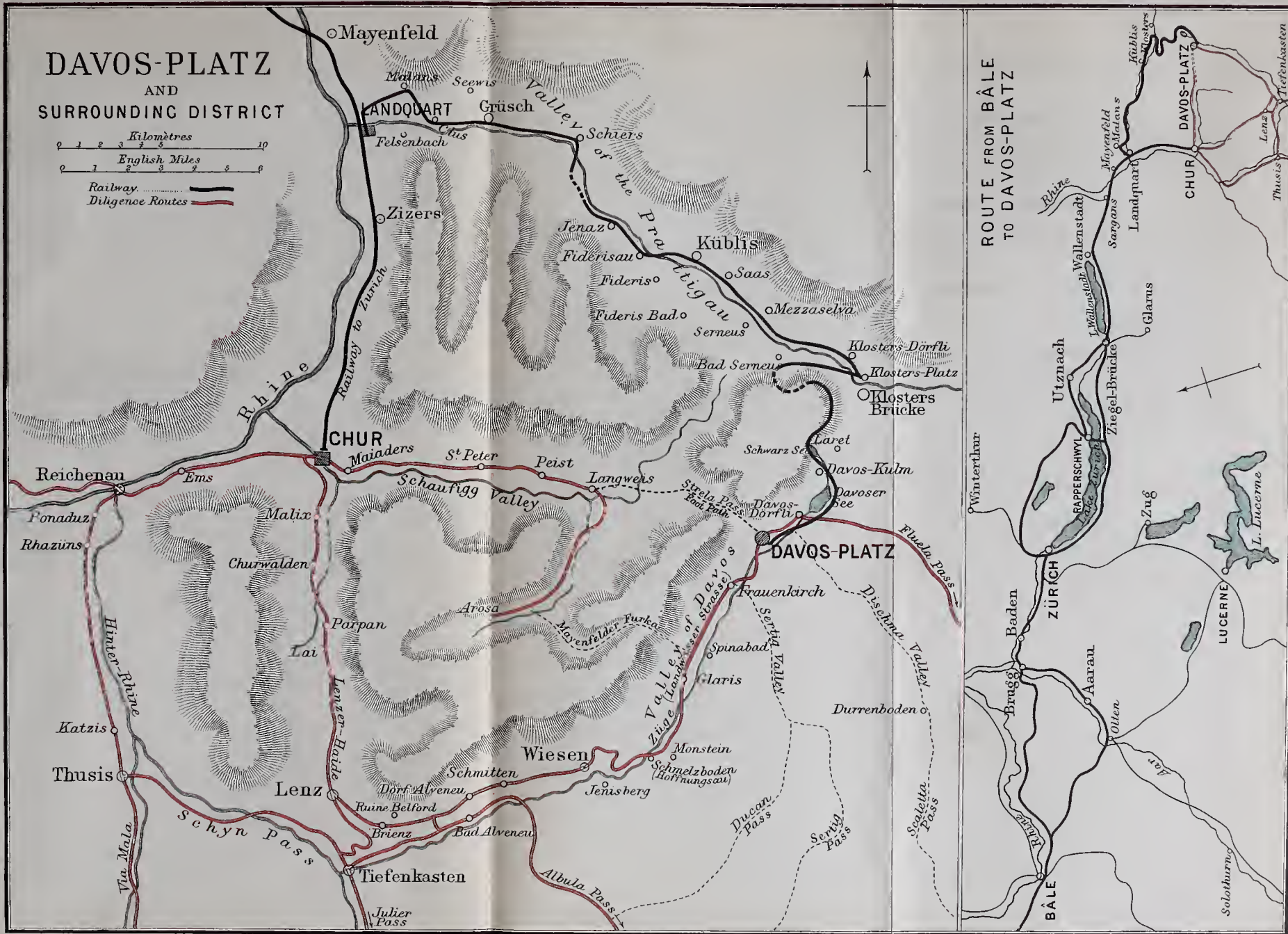
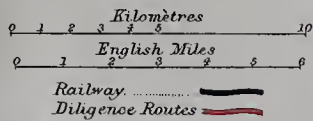
"Mr. Muddock cannot be accused of having written a dull novel. 'From the Bosom of the deep' is not only full of incident, it is highly sensational."

"HULL AND LINCOLNSHIRE TIMES," October 16th, 1886.

"This is an excellent novel. . . . It is a remarkably good story, full of dramatic incident. . . . It is a story that can be recommended for perusal and re-perusal."



DAVOS-PLATZ
AND
SURROUNDING DISTRICT





DAVOS-PLATZ.

*A Summer View
Looking N.E. from above the Church*

THE
"J. E. M." GUIDE
TO
DAVOS - PLATZ

EDITED

BY

J. E. MUDDOCK, F.R.G.S.

MEMBER OF THE FRENCH ALPINE CLUB

AND EDITOR OF THE "J.E.M." GUIDE TO SWITZERLAND, &c.

WITH

ANALYTICAL NOTES ON THE FOOD, AIR, WATER,
AND CLIMATE

By PHILIP HOLLAND

*Analytical Chemist, Fellow of the Chemical Society, and
Public Analyst for Southport.*

FOURTH EDITION BROUGHT UP TO DATE

WITH A

SPECIAL CHART OF THE DRAINAGE WORKS AND A PLAN OF THE
NEW RAILWAY.

LONDON :

SIMPKIN, MARSHALL, HAMILTON, KENT & CO., LIMITED.

1890.

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P R E F A C E.

IN offering this little work to the public, the Editor ventures to express a hope that it may be found a useful and practical handbook for those who wish for information about Davos-Platz.

Having regard to the fact that Davos claims to be a "health resort" for a variety of complaints, but more particularly for those of a phthysical nature, the utmost care has been exercised to avoid saying anything that might be calculated to mislead; and although the weight of medical authority is not given to the work, close personal observation, extending over a considerable time, and scientific research, have been brought to bear, with a result that we are now justified in saying has been highly appreciated both by the medical profession and the general public.

As the quality of the air in a place like Davos ranks first in importance, it was decided that some elaborate tests should be made, and with this view Dr. Angus Smith's system, known as "Washing," was resorted to, and we have reason to believe that it is the first time that such experiments have ever been made on the air of a health resort. While infallibility is by no means claimed for this system of washing the air, it nevertheless affords a very valuable criterion of the

air's freedom or otherwise from those organic impurities which are supposed to be in some way closely related to diseases of a zymotic character. The result of these experiments is given in the body of the work, and may be studied with advantage.

The analyses of the food and water, samples of which were collected by the Editor and his colleagues, were carefully made by Mr. Philip Holland, of Manchester, a Fellow of the Chemical Society, and public analyst for the Borough of Southport. His figures may be accepted as accurate in every detail, and can scarcely fail to prove valuable to the medical profession and scientific men, as well as to the general public.

In the first edition of this Guide we felt called upon to severely criticise the want of drainage in the village; and it is with considerable satisfaction that we now feel ourselves in a position to say that our criticism has had weight, and we gladly bear testimony to the energetic spirit that has been displayed to do away with the cause of what was readily acknowledged to be a just complaint. From the plans that we publish with this edition, the public will see that a most elaborate and effective system of drainage has been carried out regardless of cost. The services of an eminent engineer, an Englishman, resident at Basle, were engaged, and this gentleman lost no time in creating a thorough sanitary revolution, if we may so express ourselves. We have had the opportunity of personally inspecting the works since their completion, and we have now no hesitation in saying that Davos-

Platz is one of the best drained health resorts in Europe.

Having no interests to serve in Davos, the Editor has been uninfluenced by any personal considerations. The want of a Guide Book proper to the valley was generally acknowledged by all who knew the place, and he has endeavoured to conscientiously supply that want, and in a brief and intelligible way to give every information that can possibly be desired by the intending visitor.

LONDON, 1880.

PREFACE TO THE FOURTH EDITION:

A NEW edition of this work having been called for, we have taken the opportunity not only to thoroughly revise, but to some extent rearrange the text in a handier form, as well as to add new matter of a character that can hardly fail to be appreciated by those who contemplate visiting the famous health resort. Since the book was first published, now more than ten years ago, Davos has undergone a change which may be said to have almost transformed it out of all semblance to its former self, of course we mean in so far as man's work is concerned, for unless by some stupendous natural catastrophe, the physical features, except to an infinitesimal degree, could not be altered. But as regards the village itself the change is marked. A complete and thorough system of drainage has been carried out ; the once unruly and malaria-breeding river has been straightened and confined between massive stone walls until it has the appearance of a canal ; a new supply of magnificently pure water has been brought down from a mountain pass ; the electric light is used for lighting the roads and streets ; the once tortuous side paths have been straightened and widened ; laws have been enacted and are rigorously enforced for regulating the sanitary condition of the place ; handsome shops have sprung up, and now

there is hardly any necessity or luxury that cannot be purchased. A first-class chemist's, however, where good and pure drugs at a reasonable price could be obtained, is very much needed. There is also a competent and popular English physician practising in the place with a Swiss diploma, so that English-speaking patients are no longer compelled to place themselves in the hands of a foreigner, and for this desideratum we take credit to ourselves for having been instrumental in bringing it about. The English hotels, notably the Belvedere, the Angleterre, and the Victoria, have marched with the times, and the aid of modern science has been called in to render them as near perfect as possible from a hygienic point of view ; and last, not least, the wearisome and trying diligence journey from Landquart is now a thing of the past, for this year has seen the inauguration of a railway, which, when we suggested it a dozen years ago, was pooh-poohed as a Utopian idea. Nevertheless it is a *fait accompli*, and now the journey can be performed in luxuriously appointed carriages in two hours and a half, through scenery that will compare favourably with almost any line in Europe. We have had a map of this railway specially designed for the present edition, with every station clearly marked, and the traveller will thus be able to study the country through which he passes, and acquire a knowledge of the topographical features.

We trust that our efforts to render this handbook complete will be appreciated ; and it remains for us to say that suggestions or complaints will at all times

receive the most careful consideration, and we shall be grateful to correspondents who will point our errors, or suggest means whereby the work may be improved in the interests of those who seek information about Davos-Platz.

LONDON, *May*, 1890.



I N D E X.

	PAGE
General Description, - - - - -	1
Hotels, - - - - -	16
The Deaconess House, - - - - -	22
How to reach Davos and What to Wear, - - -	24
Winter Excursions, - - - - -	28
Winter Amusements, - - - - -	29
Dictary Scale, - - - - -	34
The Air of Davos, - - - - -	36
The Water of Davos, - - - - -	45
Milk Supplied to Davos, - - - - -	50
Butter, - - - - -	54
Beers, - - - - -	56
Bread, - - - - -	58
Analysis of the so-called Swiss Honey, - - -	59
Wines, - - - - -	61
Winter Thermometric Observations, - - -	64
Over the Alps in Winter, - - - - -	68
Alpine Climbing in the Winter, - - - - -	85
Davos-Platz in Summer, - - - - -	94
Davos-Platz to Landquart by the Prättigau, - -	99
Meteorological Observations, - - - - -	105
A Comparative Weather Table of Pau in the Pyrenees,	143
General view of Meteorological conditions for the three years (1879 to 1882), - - - - -	144
Memoranda, - - - - -	146
Letter to the Editor, - - - - -	149
Vocabulary, - - - - -	151
List of Hotels and Pensions, &c., - - - - -	155
General Advertisements.	



ALPINE FLOWERS.


From a bouquet gathered in Davos Platz.

DAVOS-PLATZ :

A

HEALTH RESORT FOR SUMMER AND WINTER.

GENERAL DESCRIPTION.

 ANY persons into whose hands this little work may fall will possibly not be familiar with Davos-Platz ; therefore it is the author's aim to give, in a succinct and reliable form, such information as will be valuable from a therapeutic as well as from a popular point of view.

Less than a quarter of a century ago, if any medical man had suggested a high Alpine region as a winter residence for chest patients, the strong probabilities are that he would not only have brought himself into disrepute in the medical world, but would have incurred the ridicule of the general public. Even now the profession is divided against itself on the question of a mountain, or high altitude, or southern climate being most beneficial in lung-mischief ; for doctors are proverbially conservative, and slow to countenance any new idea or scheme or experiment that has not been thoroughly tested by thoughtful study and practical experience. In the interest of humanity this reluctance to hastily accept new theories, or try new places, is to be commended, though very frequently there is a blind clinging to old forms of faith, and an illogical prejudice against

A

innovations, even though they promise great things. To go to this place or that, whether in search of health or on pleasure bent, is as much governed by fashion's laws as is the cut of a coat or the shape of a bonnet; and he is a bold man who undertakes, for the first time, to lead the vast family of human sheep to a new health resort or pleasure ground. Madeira, the Riviera, the South of France, Egypt, and the Cape of Good Hope have all had their day; but long experience has proved that each place, while good in its way, does little more in a large number of cases than slightly arrest the progress of the disease, and at the most offer sufferers a genial climate in which to end their fast-fleeting days. What has been eagerly searched for, and what is so much desired, is a climate possessing certain atmospheric conditions, which, acting upon the wonderfully delicate respiratory organs, will not only arrest decay, but possess healing qualities that are capable of restoring the tone of the broken-down lung tissue so far as to enable it to perform the functions allotted to it by Nature.

This being granted, we propose to examine carefully, and in detail, the claims of Davos-Platz to be considered a place of this description; taking the opportunity to state that we have qualified ourselves for the work, not only by a careful study of the climate, but by scientific observations, the results of which will be given in their proper place.

Davos stands in an Alpine valley, and according to Doctor Frankland's measurements is as nearly as possible 5352 feet above sea level—that is, roughly speaking about one thousand feet higher than the highest point of Great Britain, which is Ben Nevis in Scotland. The valley is situated in eastern Switzerland, in Canton des Grisons; and runs almost parallel with the Engadine, the nearest point of which is nineteen miles away.

Twenty-five years ago Davos-Platz was a primitive Alpine hamlet, almost entirely unknown to the general public, and like all Alpine villages was not conspicuous for its perfect sanitary arrangements, or the cleanliness of its inhabitants. About that time, however, a resident German doctor was struck by the fact that the natives enjoyed an immunity from lung disease, and were in other respects generally healthy. It therefore occurred to him that, owing to the almost entire absence of moisture and wind in the winter, together with the remarkably pure air, it was admirably adapted as a winter residence for chest patients, notwithstanding its Arctic temperature, and on communicating this idea to some of his *confrères* they sent a few patients as an experiment. The results were so satisfactory that the increasing reputation of the place gradually brought more visitors to the lonely valley, where they passed the winter months ; and in the spring returned to their homes greatly benefited by their sojourn in this health-restoring region of snow and ice.

For a good many years Davos remained utterly unknown in England, although other nationalities had flocked there by thousands, and there was ample and conclusive evidence of beneficial effects of a residence in the valley. When some fourteen years ago attention was at length aroused in England, quite a rush of English visitors took place, and now there seems to be a danger that mischief may arise owing to the want of discrimination in the class of patients who are most likely to experience the good effects of the fine climate. As a natural consequence of this influx of visitors, the once obscure hamlet has rapidly developed into an important place of grand hotels, pensions, and excellent shops, where almost every necessary and luxury may be purchased.

So far as the mere physical features of Davos go, it will not bear comparison with dozens of other Alpine valleys in point of beauty ; but out of Switzerland it would be difficult to select a spot that could equal it in all particulars, so that when not contrasted with other Swiss scenery it is very beautiful indeed.

The valley, which is from ten to fifteen miles long, runs from N.N.E. to S.S.W. Its floor slopes gently to the south, a configuration which is exceedingly advantageous as regards the sun. It possesses also one superlative advantage over all the neighbouring valleys, *i.e.*, in Davos the valley-wind has its current from north to south, so that the invalids who rest in the course of their walks on the southern side of some *châlet* or tree-clump are basking in the sunshine, while they are at the same time sheltered from the prevailing air-current. These favourable conditions are in complete direct contrast to what is for instance the case in the Engadine, where the valley wind streams from south to north. In St. Moritz, glass screens along the southern façades of the hotels are a necessity to protect the invalids who wish to enjoy the sunshine from the prevailing wind. Of course, these artificial shelters can only be erected on limited areas ; patients who rest during their walks must avoid the wind at the expense of the sunshine. When sheltered from the wind they are sitting in the shadow. And it must be borne in mind that these local air-currents—determined by the topography of the valley—are equally cold whether they stream from the north or from the south, and that the temperature in the shade during the winter is nearly always below freezing point. The average breadth of the valley of Davos is not more than half-a-mile, and it is protected on each side by vast mountain ranges, which rise for the most part pre-

precipitously to between 2000 and 5000 feet above the valley, consequently between 10,000 and 11,000 above sea level. These ranges are pierced by several passes, gorges, and lateral valleys, chief of the passes on the east side being the Flüela, which is a post and telegraph road and the highway into the Lower Engadine and the Val Tellina.* Of this pass we shall speak further on. Nearer Davos, and running parallel with the Flüela, is the Dischma Thal, which is nearly ten miles in length, and is closed at its upper end by the Scaletta glacier. To the north of Davos-Platz, distance about three-quarters of a mile, is the village of Davos-Dörfli, admirably situated, and well provided with hotels, and possessing the advantage of being sunnier even than Davos-Platz, but on the other hand it is much less sheltered from wind. Further still is Wolfgang or Davoser Kulm, the highest point of the valley, which falls away precipitously from here to Klösters. In the barrier of mountains which separates the Flüela from the Dischma Thal is the rugged glacier-covered Schwarzhorn, 10,338 feet, from whose summit a wonderful view is obtained that is unsurpassed in Switzerland. Dominating Davos on the east side is the Jacob's Horn, and the big and little Schiahorn on the west side; while the south end of the valley is shut in by a magnificent range of jagged peaks, including the tooth-like Tinzenhorn—which is a miniature Matterhorn, and nearly as difficult to ascend—the Piz Michel, and the Piz D'Aela, each of which is covered with perpetual snow. An impetuous torrent called the Landwasser—which rises from the Davoser See (lake), and is fed by streams from the Flüela, Dischma, Sertig, and other Thals—flows through the valley;

* Locally pronounced Veltlin

tearing its way along a wonderful gorge known as the Züge—frequently swept by tremendous avalanches in the spring—to join the Hinter-Rhine at Thusis.

In summer Davos is a little world of marvellous colours, for no greener grass grows anywhere; while the flora is perhaps richer, more varied, and profuse than in any other valley of the same height. It has the advantage of never being insufferably hot, and as a starting point for many interesting mountain and glacier excursions, is admirably situated; while the neighbourhood abounds in exquisite walks through romantic gorges and pine forests. We propose at first, however, to deal with Davos under its winter aspect.

The first fall of snow takes place, generally speaking, about the beginning of November. The previous day, in all probability, has been brilliantly fine, and the sun may have set in a glory of gold and scarlet; but when the Davosians turn out on the following morning they may find their valley robed in dazzling white, which will remain so, under ordinary circumstances, for nearly five months. If the first snowfall is very heavy, the natives say it presages a good winter; and “very heavy” may be taken to mean three to four feet on the ground at once, and a “good winter” a very cold, dry, and hard one. Throughout November, and very frequently far into December, the weather continues more or less unsettled, and snow falls at intervals or incessantly until the villages and mountains are thickly covered. It consolidates on the road to three or four feet in thickness, so that all wheeled vehicles are changed for sledges. About the end of December, in favourable years, settled weather may be looked for, when Nature in Davos falls into her long winter sleep. The conditions now are perfectly still air, intense cold, absolute dryness, and absence of wind and

fog. These conditions, however, are not always to be relied upon, as will be hereafter shown. During the winter months the cattle are all housed in the chalets; the forests are frozen into stony stillness; and there is not the cry of the tiniest animal or the chirp of a bird to break the silence, though the track of foxes—and on very rare occasions, indeed, that of a bear—may be seen in the snow.* The water courses are all frozen into solid ice, and the Landwasser chafes its way between piled-up masses of ice, that in many places entirely bridge it. At night the thermometer will frequently sink below zero, the stars shine with unsurpassed brilliancy, and when the moon is high, Davos, under these conditions, presents a picture of cold silvery-white beauty that can never be forgotten. The days are cloudless, the colour of the sky an intense lapis lazuli, and the sun so brilliant and hot that umbrellas and awnings are indispensable, and the most delicate invalid may during the sunny hours sit in the open air with impunity. As soon as the sun sinks the low temperature of the air makes itself keenly felt, the balconies, terraces, &c., where the invalids have been literally roasting in the sunshine, are quickly deserted; but their occupants issue shortly from the house, in warmer garments, and take the exercise after sunset which is so strongly recommended. Strange as it may sound, *post-prandial* promenades are also frequently recommended by their medical advisers to many of the patients. Despite the low temperature, it is astonishing, comparatively speaking, how little the cold is felt. This is the result, of course, of a dry atmosphere and an absence of wind. These exceptional conditions secure for Davos a

* Two bears were shot near Davos during the winter of 1879, and one at the beginning of the winter 1883.

salubrity which few other health resorts can boast of. But in addition to this, the air possesses singular tonic qualities, and is highly ozonised by the volatile principles diffused by the pines, which, it is well-known, are valuable therapeutic agents; whilst its purity is fully borne out by the series of experiments we have made on the air, the results of which are given further on.

From the facts above mentioned, it would seem that Davos answers all the requirements of a sanative health resort for delicate lungs:—First, on account of its dryness; secondly, its purity and freedom from irritating germs; thirdly, its rarity (the barometrical pressure being one-fifth less than at sea-level); and fourthly, because it possesses tonic properties in a high degree.

The favourable influence experienced by the patient is, that his cough grows less troublesome, hemorrhage is arrested, his breathing becomes freer, and there is a well-defined sense of general improvement. But perhaps the most marked and encouraging feature is the increased appetite, and consequently increase of weight.

It will, of course, be understood that we are now referring particularly to those patients who are in a condition to be benefited by such an entire and thorough change as removal to Davos must necessarily entail; but, as we shall endeavour to show later on, this change may be, and is in a large number of cases, decidedly injurious, and calculated to accelerate the end which every one is anxious to stave off. The patient must be in a state favourable to the new and exacting conditions which the climate imposes, and if he is not, then he will very soon find himself losing instead of gaining ground. Cases of advanced disease do not do well; when vitality is well-nigh exhausted and circulation feeble, the recuperative power of the climate seems to act

in inverse ratio. Patients in the early stages of the illness, on the contrary, nearly always do well. Many persons who cannot stand mountain air would find themselves improved by a sojourn on the sea line, and *vice versa*; and which of the two should be selected is a question that only a skilled medical man is competent to decide; but even a doctor may be seriously at fault in this matter in the absence of reliable data bearing on the place to which he proposes to send his patient. If the winter climate of Davos were not liable to alterations—that is, if it invariably presented *all* the features we have referred to—it would be safe to say that it would be pre-eminently *the* one place where invalids suffering from lung mischief might hope for an amelioration of their worst symptoms, if not for absolute recovery. Unfortunately, however, the climate is—as all climates are—liable to marked alterations. To instance the two winter seasons of 1879-80 and 1880-81. The first will be remembered as perhaps one of the most perfect ever known in the Alps. There was during many weeks an entire absence of wind; the air was dry and tonic in a singular degree, and with one or two brief breaks the sky was absolutely unclouded, and the sun was brilliant for three months. As a natural consequence there were a great number of rapid improvements, and not a few recoveries that might not inaptly be described as wonderful. The following season, however, this order of things was reversed, and Davos-Platz proved that it could be as capricious and fickle as our own damp and misty islands. The snow-fall did not set in until late, and then it was singularly light, while a high temperature, and fogs and wind, were the rule and not the exception. Those people who derived any real benefit were in a very small minority. It is fair to say, however, that this sort of weather was as

unusual as it was exceptionally bad. On the other hand, it would be manifestly dishonest to assert that fogs, winds, and dampness are foreign to Davos; for any one who will take the trouble to study the meteorological tables, extending over a number of years, will find that there are very few seasons indeed when these atmospheric conditions have been entirely absent. Still, if an average is taken it will be observed that the climate preserves a singular uniformity, and it is this uniformity which places it in the front rank of sanatoria.

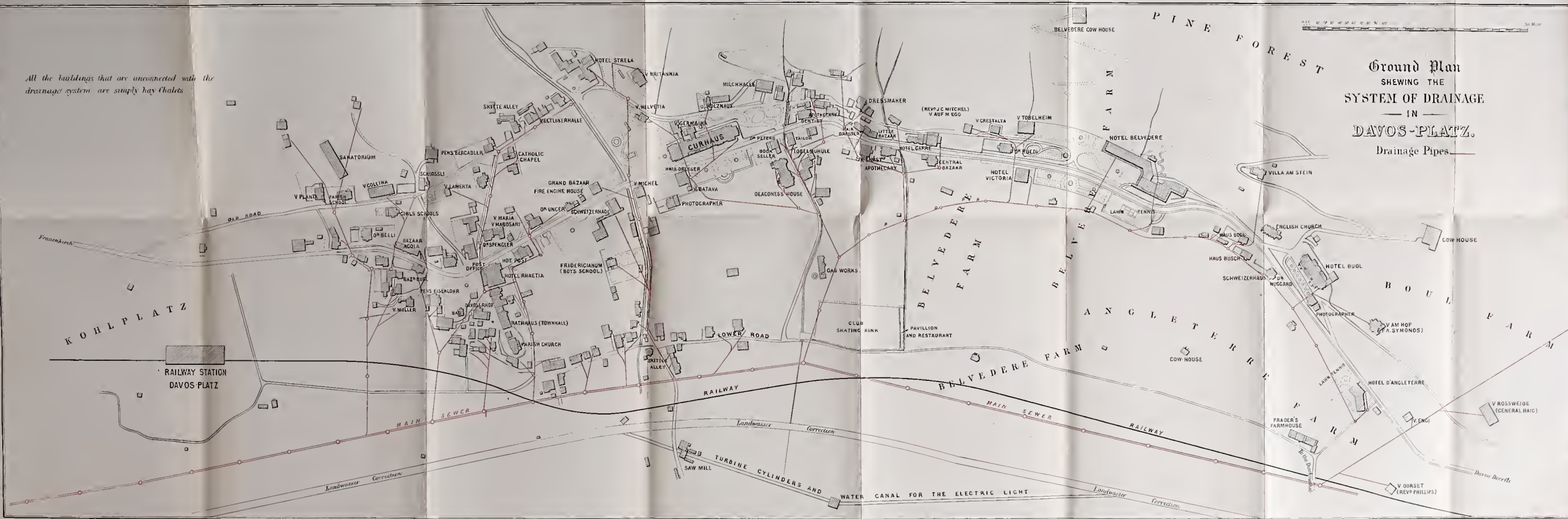
The Föhn, or south-west wind, is most to be dreaded. It is warm and moist, and exercises a very depressing effect on those who are in the least degree sensitive. Except in very bad seasons, however, such as the one referred to above, the Föhn is not a frequent visitor, and fortunately does not last long. It is during the Föhn that avalanches are most liable to fall, owing to the warm air softening the snow.

As soon as the sun rises and shines well in the valley, exercise, for those who can bear it, may be freely indulged in. The snow is scarcely affected by the sun, but remains hard and firm; for although the sun's rays are intensely hot, the temperature of the atmosphere is as intensely cold, and this is what may be described as perfect "Davos Weather." At such times the sky will be perfectly cloudless, and intensely blue. The exquisite beauty of this sort of days could scarcely be realised by any word-painting. To the patient they are invaluable, while even in the sound they beget a sense of enjoyment of life that is simply delightful.

It may be roughly stated that during the winter months—and given an average season—a patient can remain in the open air at least seven hours a day; and the advantage

All the buildings that are unconnected with the drainage system are simply hay chalets

Ground Plan
SHEWING THE
SYSTEM OF DRAINAGE
— IN —
DAVOS-PLATZ.
Drainage Pipes —



of this will be readily understood even by those who have little or no knowledge of the laws which govern lung complaints ; an advantage that is greatly enhanced when the air is perfectly pure, crisp, and tonic. Even at night, notwithstanding the lowness of the temperature, patients are frequently recommended to sleep with the windows of their bedrooms open. Another fact, which speaks volumes for the climate, is the little liability on the part of visitors to take cold. This immunity from a common annoyance is no doubt ascribable to the tonic properties as well as the dryness of the air.

Amongst the many advantages which this beautiful mountain valley offers to the invalid, absolutely pure water is not the least of them ; therefore it may be inferred that all the requirements of a curative resort come near to being fulfilled.

Acting on the advice which we ventured to give some eight years ago in the early editions of this work, a thorough and almost perfect system of drainage has been carried out from the designs and under the superintendence of Mr. John Icely, an English civil engineer resident in Basle. In order that this system may be fully comprehended, we append two charts, which have been reduced from the original plans, whereby it will be seen that not only is the scheme an ambitious one, but from its effectiveness it must now raise Davos-Platz to the very front rank of European health resorts ; and we may even go as far as to doubt whether any other place of the kind can compete with it.

It will be observed that there is a main sewer, beginning at the road to the Dischma valley at the eastern end of Davos-Platz, passing along the valley, and ultimately falling into the Landwasser near Frauenkirch. The sectional

pipes are in connection with the main sewer—each sectional pipe being destined to collect the sewerage from every inhabited house of a special quarter (or section). Behind the Hotel Garré (*see* sectional plan—Section A) is the entrance of a flushing stream. The water is brought down from the mountains through a conduit with a tremendous fall, and entering at the flushing traps it sweeps with impetuous force through the whole system ; so that in point of fact there is a rapid and incessant flow of pure mountain water through the pipes, thereby rendering it an absolute impossibility for any organic matter to lodge. There is also a constant flow of water through all the house pipes.

As we had an opportunity of inspecting the works during their progress, we can testify to the efficient manner in which they have been carried out. The sewers themselves were moulded in the ground with compressed cement, so that the insides are perfectly smooth and without joints. At various points are syphon shafts (Section C) to give access to the sewers ; and these shafts are traversed in such a manner as to render the escape of foul gas impossible. During our examination of the works, we endeavoured to detect the slightest malodour in these shafts, but quite failed to do so ; and as they are fitted with iron double covers, the space between which is filled up with charcoal, two feet in thickness, they are hermetically closed, and afford perfect immunity from even the remotest chance of gas escaping. It is probable, however, that if gas accumulates in the sewers at all, it is only in an infinitesimal quantity, for the ceaseless stream of rushing water carries all before it, and the falls are too steep to allow of any stoppage. The cost of the drainage amounted to 160,000 francs (£6,400). Another great improvement which has been carried out some years ago is the “correction” or canalisation of the

Landwasser. The river used to twist and turn in a very erratic manner, and as some of the meadows through which it flowed were lower than its level, the slightest rise in the waters was sufficient to flood them. For a long time attempts were made to confine the river to its channel by means of low dykes, it being imperative, we believe, on the part of each owner of the land to contribute his share of the necessary stones. The brawling stream, however, when swollen by floods, scornfully washed these puny barriers away, and flowing over the low-lying land turned it into swamp. All that is now changed, for the enterprising Davosers, having got their drainage works out of hand, tackled the river, and by straightening its course and lowering its bed put an end at once and for ever to its wandering propensities. Since the completion of this work the land which was swampy is now quite dry, and the coarse bog-hay is turned into beautiful rich meadows. The cost of the canalisation amounted to 300,000 francs (£12,000).


In addition to the drainage improvements and the canalisation of the Landwasser which have been so successfully executed, the slaughtering of cattle in scattered slaughter-houses is prohibited, and a general abattoir is to be erected out of the village, at an estimated cost of 35,000 francs ; and, in order to keep the air of the village free from smoke, the bakers carry on their work during the night time only. No refuse of any description is allowed to be placed near the village, and on this point the utmost vigilance is exercised. As a further improvement, the water supply, excellent always, has been increased by the construction of two conduits from some springs in the Flüela Valley. This has involved an outlay of 150,000 francs (£6,000). Double pathways have been made from one end of the village to the other, and some awkward curves of the

road have been straightened, according to plans drawn up in the cantonal office of the Road Engineering Department. There is, however, one part of the eastern end of Davos-Platz not yet completed on account of the opposition of the Buol family, who are the only people that have not yet given the necessary ground for the right side pathway and the straightening of a sharp curve between the Belvedere ground and Buol's "red house." This is a matter of surprise, as the Buol family own a large hotel, and one would have thought that they would have had the interests of the health-resort at heart, instead of opposing necessary improvements. For years the Curverein tried to induce Herr Buol to fall in with these improvements, but all representations were in vain. In the whole health-resort, from one end to the other, there is nothing to be found so objectionable as the place near the Buol's "red house," where, close to the principal promenade, a contractor has a manufactory for cement-pipes in the most primitive way. They are made in wooden hovels, with dirt and disorder all round. This manufacturer rents the land from Herr Buol.

Great improvement has been made in the way of heating. The system known by the name of "Bechem and Post" is now patronized in Davos to a considerable extent. It is in use in some of the private villas, in the new addition to the Hôtel Belvedere, in the Sanatorium, in the Infirmary, as also in two of the Kurhans dependances, *i.e.*, the Britannia and the Batava. In the two latter, however, the system could not be properly developed, as it was impossible to introduce the ventilating shafts—an essential part of the system—into walls already completed. The principle of the system is the constant renewal of the air in the heated localities. The theory is an admirable one, and is worked out to practical perfection. The heating apparatus is in

direct communication with the atmosphere outside, so that a constant stream of pure air warmed to a suitable temperature enters the room. On the opposite side of the apartment is the ventilating shaft by which the exhausted air is got rid of. Each room has a ventilating shaft of its own, which is carried through the wall up to the roof of the house. In the space of one hour the air is entirely renewed in each of the rooms into which "Bechem and Post" system is introduced. The heat is generated by a large furnace in the basement of the house, heated with coke, and kept constantly burning from the beginning until the close of the cold season. From the boiler of the furnace the steam is conveyed through a system of pipes to the heating-apparatus placed in each room. These pipes are invisible, being built into the walls, and are covered with a material which is practically a complete non-conductor of heat. The temperature of the room can be regulated according to individual taste, the heating-apparatus being placed in a box of compressed paper about four inches thick (a non-conductor of heat), which is provided with a movable cover, by which the heat can be regulated or shut off entirely. Another great advantage of this style of heating is the small amount of smoke produced. We understand that several establishments are about to do away with their old system of heating in favour of this recent and more scientific one. We trust that the time is not far off when the new system will be universally adopted at Davos, thus solving two important hygienic questions, viz., the ventilation of the houses and the abolition of smoke.

HOTELS.

S regards the accommodation, much might be written under this head. There are many houses, good, bad, and indifferent. At the end of the work we append a complete list of the hotels and pensions. The principal German hotel is the Kurhaus ; the principal English one the Belvedere. THE KURHAUS is the property of a Company, and it is managed by an enterprising Dutchman, Herr Holsboer. The house is large, well furnished, and has excellent accommodation, while the table is good. In connection with this hotel there are several villa dependencies, which can be hired by families requiring privacy. We believe, however, that the prices range high. The Kurhaus is warmed throughout by means of steam pipes—a method of heating that is, we believe, much disapproved of by competent medical authorities—and the house does not stand well in respect to position.

THE RHÄTIA is also a good hotel, but is little frequented by English people. The table is said to be excellent, but we have heard many complaints about the ventilation of the house.

THE VICTORIA is a new English hotel, with accommodation about thirty-five visitors, managed by Herr Pestalozzi and his wife (who formerly kept a small private pension, known as the Bergadler). Madame Pestalozzi is an English lady, and devotes all her time and attention to her invalid visitors. The cooking is exceptionally good. The Victoria may be very highly recommended to any one requiring home comforts and quiet. The management is admirable.

THE BOUL is a good house, and almost entirely patronised by English people, but it has the reputation of being rather slovenly in its management.

THE BELVEDERE—managed by Messrs. Coester Brothers, the proprietors—must unquestionably take precedence as the leading hotel. It has accommodation for about two hundred visitors, and the admirable manner in which it is conducted is deserving of all praise. Its position would seem to be the best in the place, while the house itself is most perfectly drained. This system of drainage, as well as the system of ventilating, reflects the highest credit on the architect, and the introduction of Twyford's "Unitas" make the hygienic arrangements, so often neglected on the Continent, complete and perfect in this hotel. Much care and trouble are also taken to suit the food and the cooking to the tastes and habits of English people; and these facts may explain the high reputation the house has gained. Of Herr Coester personally we can speak in terms of unqualified praise. He understands English perfectly, and exercises the utmost care to ensure the comfort of the visitors. The Belvedere possesses English and French billiard tables, and a permanent stage for amateur theatricals, concerts, and other entertainments. There is also an English library for the use of the visitors. Last year a large addition was made to the Belvedere. The new wing contains sixty spacious, airy bed-rooms, all with southern exposure and balconies, and the "Beehem and Post" heating and ventilating system (see page 14). There are well-appointed bath-rooms on each floor, hydraulic lifts both for the old and new buildings, and new public rooms have been added to the already large suite.

THE ANGLETERRE, lately enlarged and much improved, stands in a beautiful and sunny position, with a large garden and tennis ground. It accommodates about fifty people, and offers every modern comfort and convenience. There is a hydraulic lift to each floor, on the safest and

most improved scientific principles. The proprietor is Herr Karl Demmer. Both he and his wife speak and understand English thoroughly, and know how to make their guests comfortable. The sanitary arrangements, drainage, ventilation, and water supply are perfect. Of the excellence of the table too much cannot be said, and the food and cooking are specially adjusted to English tastes. A stage for private theatricals or other entertainments has also been recently added to complete the comforts of the hotel. It is entirely patronised by English people.

THE SANATORIUM is a new house, opened last season under the medical direction of a German doctor, who is the proprietor. It is a species of private hospital, and is exclusively patronised by Germans.

As regards the charges for pension, they range in all the best hotels from 5s. 6d. (seven francs) to 9s. 6d. (twelve francs), according to the room selected. Of course, it will be understood that these prices do not include *extras*. These are lights, fuel, wine, or any other article of consumption ordered, which is not comprised in the regular meals of the pension. Milk is charged for at the rate of about three halfpence per glass. The Val Tellina wines, which should be cheap, are generally high in price. Whisky is charged for at the rate of seven francs per bottle. English beers are dear, and the same remark applies to good champagne.

There is yet one *extra* which all the hotel circulars preserve reticence about, but which, in our opinion, ought to be made known. We refer to the charge that is made to the relatives of a deceased person for the *bed and bedding* upon which the death takes place. As much as a *thousand francs* are charged in some of the hotels, while, we believe, three hundred francs is the minimum price. We have

heard it argued that if the subject were mentioned in the circulars, it would be calculated to frighten sensitive people. It seems to us that the argument is illogical, and we think that as long as the tax is imposed it ought to be known what will have to be paid in the event of death. It is but just to say that this *extra* is not peculiar to Davos. It is charged in all Continental health resorts. As to whether the charge is fair or not we offer no opinion. What we complain about is that the matter is kept secret. On this subject we have received a letter from Mr. Coester, which we publish on page 130.

As regards the class of patients who should resort to Davos, that is a question we can scarcely presume to discuss; but close observation justifies us in saying that it is not suited to *all* consumptive invalids, and there are some cases that it would be decidedly wrong to send there. In a large majority of chest and throat complaints, good results may be hoped for from a residence in the valley; but it is evident, even to the non-medical mind, that persons suffering from very advanced phthisis, and where the strength has been so impaired that the patient is helpless, are not the cases for Davos, as the powerfully tonic air demands that there should be some recuperative energy left in the subject upon which it has to act; and without this energy the very opposite effect to that looked for will certainly be the result. It is better for such unfortunate people to await the inevitable end in the comfort of their own homes, where they can have the care and consolation of their friends. One other question which demands very serious consideration is, how long should a patient remain in the valley? Towards the end of March, in average seasons, the winter gives signs of breaking up; but it must not be supposed that an English thaw sets in with all its concomitant evils

of slush and wet, colds, influenza, and catarrhs. As a matter of fact, the snow makes a determined resistance to the advent of spring, and becomes, under the influence of long days and a hot sun, not soft and watery, but crisper and harder, so that the surface forms a firm crust on which, during the early hours of the day, the foot of the pedestrian barely leaves an impression. To those who are unfamiliar with an Alpine climate, it will seem strange to be told that the great white covering that has for so many months shrouded the earth with a mantle of dazzling white vanishes almost imperceptibly and ghost-like. The summer tourist in Switzerland, however, knows how in the high Alps a mountain side, or the lower parts of a glacier, quickly becomes bare of snow under the influence of the sun, and how the dry, rarefied air greedily absorbs all the moisture, so that there is neither mist nor fog. This process is exactly what may be witnessed in Davos in April. So long as the real facts were imperfectly understood, this snow melting period was *à priori*, and without sufficient evidence, condemned as unhealthy, and there was a strong prejudice against remaining through the "snow melting." Riper experience, and closer observation, have now shown that this period compares by no means unfavourably as regards salubrity with the rest of the year; while, on the other hand, it has been clearly demonstrated that patients who quit the dry air of the sheltered valley to expose themselves to the treachery of a lowland spring, frequently pay a heavy penalty for their temerity, and lose much of the health and vigour that their stay at Davos has given to them. But invalids are generally eager for change, and perhaps naturally so, and where to go, when fretful restlessness makes them deaf to wiser counsels, is a question that causes no small amount of anxiety to those who are

responsible for their welfare. Baden Baden has frequently been selected, but, beautiful as Baden is, it is unsuited. The change from the high Alpine region to the low-lying, humid, and relaxing German town is too great and sudden, and has a tendency to undo all that Davos has done. Montreux, on Lake Geneva, is recommended, and some medical men, whose opinions we have solicited, speak very favourably of this place. We have also high medical authority for saying that a sea voyage after Davos may in a large number of cases be attended with the happiest results. It will be understood, however, that under no circumstances should a patient go to Davos without having first consulted a medical man at home. English patients will be glad to know that an English doctor (William R. Huggard, M.D., M.R.C.P., Lond.), is settled in Davos-Platz.

Besides hotels and pensions, Davos possesses many good shops, and all sorts of luxuries and necessities may be purchased. Clothes, boots, and shoes, however, are perhaps not all that could be desired. There are also two chemist's shops, not good, and a dentist. An English Church (St. Luke's) was built some years ago, in which service is regularly held. It was erected under the auspices of the "Colonial and Continental Church Society."

THE DEACONESS HOUSE.

(GERMAN DIAKONISSENHAUS.)



HIS is an institution established for the purpose of enabling patients who are seriously ill to obtain the nursing and attention which they cannot obtain in an hotel. An admirable house has recently been erected in the centre of the village. It is governed by a committee of medical men, and the following are some of the rules that have been framed :—

- (1) Patients seriously ill, and requiring extra care, will be received as in-Patients at the Deaconess House.
- (2) Patients suffering from infectious complaints will find special accommodation.
- (3) Patients without means can obtain admission on the recommendation of a doctor, and after having undergone an examination by one or more doctors of Davos. The Committee reserve to themselves the right of requesting an attestation as to the patient's means, such attestation to come from the doctor who recommends the patient.

- (4) The following are the prices for patients capable of paying :—

Large South room, -	-	-	4	francs.
„ West room, -	-	-	3.50	„
„ North room, -	-	-	2	„
Small South room, with Balcony, -			3	
„ „ without Balcony,			2.50	„
„ North room, -	-	-	1.50	„

Washing is not included in the above prices.

Breakfast, -	-	-	} 4 francs per day.
Dinner, -	-	-	
Supper, -	-	-	

Exclusive of wine and milk.

Charges for extra nursing :—

Day nursing,	-	-	1.75 francs.
Night „	-	-	2.25 „
Day and Night,	-	-	4 „

- (a) All meals that are taken to the bedrooms are charged extra for.
 (b) Poor people are charged a uniform rate of five francs a day.
 (c) People suffering from infectious diseases have to pay for the cost of disinfecting their rooms and furniture.
 (d) Every patient has to strictly conform to the rules of the house, and to obey the orders of the doctor.
 (e) Patients seriously ill can have a friend or servant with them, and the price of pension for this extra person will be decided by the Committee.
 (f) The general breakfast hour is in summer from 7 to 9 o'clock. In winter, 8 to 9. Luncheon, 1 o'clock. Dinner, half-past Six. Patients can only have meals in their rooms by order of a doctor.
 (g) Smoking in the house is strictly forbidden.
 (h) The house is closed every evening at 9 o'clock.
 (i) No visits are allowed after 6 P.M.

Patients requiring further information should address letters in English, German, or French, to

MONSIEUR LE PRESIDENT,

DIAKONISSENHAUS,

DAVOS-PLATZ,

Canton-dés-Grisons,

Switzerland.

The postage of a letter to Switzerland from England if it does not exceed half an ounce, is 2½d.

HOW TO REACH DAVOS AND WHAT TO WEAR.

REFERENCE to our route map will show that the line of railway from Zürich terminates at Coire, which is the capital of the Canton des Grisons, and has a population of nearly eight thousand. The second last station before Coire is Landquart, and these two points are the starting places for Davos. A great change has taken place in the journey from Landquart to Davos-Platz, for the slowly creeping diligence has been replaced by the modern railway carriage. The line was opened on the 9th of October, 1889, as far as Klosters, and the portion from Klosters to Davos-Platz will be ready for traffic on the 1st July, 1890, this year. Last autumn, when we had an opportunity of inspecting it personally during a visit we made to Davos we found that the line was already far advanced, and we were delighted to observe that it was laid out so that the whole country is seen to the greatest possible advantage. We append a special map of the line, with the beautiful country it passes through; mountains, townlets, villages, &c., being marked with the greatest possible accuracy and care. The diligence formerly took $7\frac{1}{2}$ hours from Landquart to Davos-Platz, the train will perform it in $2\frac{1}{2}$ hours. The carriages are most comfortably fitted up, well heated in the cold season, and provided with galleries, from which the surrounding scenery can be thoroughly enjoyed. The trains from Landquart to Davos-Platz are in correspondence with the through-services from London to Basle, and Davos-Platz can be reached from London in 30

hours, by the new Through-Route via Dover, Calais, Laon, Amiens, Basle. The diligence from Coire to Davos-Platz will, of course, continue to run, but the use that will be made of it by invalids will be very limited. Even travellers to the Engadine will in future take advantage of the railway to Davos, because the dusty and uncomfortable diligence journey to the Upper-Engadine (Samaden, St. Moritz, Pontresina, &c.), is 2 hours shorter from Davos-Platz than from Coire. The Baths of Tarasp and Schuls in the Lower-Engadine are now reached in 8 hours by the Fluella Pass from Davos, while the diligence from Landeck (Arlberg line) to Schuls takes 11 hours. Another advantage of the Davos route over the Landeck route is that you remain always in Switzerland, thus avoiding the troublesome Austrian Custom-house.

From England there is a choice of several routes. Of course it will be understood that *Bâle* is the point always to be made for. The railway journey from Bâle to Landquart, *via* Zürich, where you change carriages, occupies about $6\frac{1}{4}$ hours.

1st. Bâle can be reached *via* Paris and Strasburg—time from London about 28 hours. Delicate people, however, should spend the night in Paris.

2nd. *Via* Queenborough, Flushing, Brussels.

3rd. *Via* Harwich, Rotterdam, Heidleberg.

4th. *Via* Ostend, Brussels.

5th. *Via* Calais and Brussels.

The last named route is, to our mind, decidedly to be preferred for invalids. If the night express from London be chosen, it leaves Holborn Viaduct at 8.15, and Ludgate Hill a few minutes later. Calais is reached about twelve o'clock. The train for Brussels departs from thence at 1.25 A.M., and arrives at Brussels at six in the morning. The day

should be spent in Brussels, where there is a choice of many good hotels. From Brussels to Bâle there is only one fast train in the twenty-four hours. It leaves at 7.30 in the evening, arriving at 9.49 in the morning. The journey occupies 14 hours 19 minutes. The distance is 365 miles. First class fare, 62 francs 50 centimes; second class, 44 francs 90 centimes. The route is *via* Namur, Arlon, Luxemburg, Metz and Strasburg. Time occupied by the ordinary trains is 23 hours 15 minutes. It is better to choose the night train. The carriages are well warmed and comfortable. Luggage is examined at *Bettinger*. The fast train for Zürich—distance $55\frac{1}{2}$ miles—leaves Bâle at 10.15, twenty-five minutes after the arrival of the Brussels train. Time occupied on the journey 2 hours 20 minutes. First class fare, 9 francs 30 centimes; second, 6 francs 55 centimes. The train leaves Zürich for Landquart—distance 63 miles—at 2.33. Time occupied, 4 hours. First class fare, 12 francs 30 centimes; second, 8 francs 65 centimes. *Through* tickets should be taken at Bâle for Landquart. There is a direct new through-route from London to Bâle, leaving Ludgate Hill or Charing Cross, and going *via* Dover, Calais, Loan, and Amiens. By this route Davos can be reached in 30 hours. It is, however, a long journey for delicate invalids.

As regards clothes, it is essential that they should be warm and light. Good thick fur gloves, woollen stockings, a fur-lined coat will be useful for gentlemen, and a Shetland shawl for ladies. Boots should be well made, with thick soles and plenty of nails, and come well up in the leg. They should be large enough to admit of a cork or woollen sock. It is very difficult to get good boots on the Continent. They are made to look well, but do not wear well, on account of bad workmanship, and the inferior quality of the

leather that is used. Blue or smoked spectacles are useful for those whose eyes are at all sensitive to brilliant light, as the glare from the snow is trying.

Luggage accompanying the passenger can be registered through from London to Brussels *only*. It must be re-registered from there to Bettinger on the frontier, and then re-registered again for Davos. It is better to send heavy luggage beforehand by *Petite Vitesse*, registering it right through to Davos, and declaring the contents. It should also be insured. By *Petite Vitesse*, it would be *fourteen days* on the road at least.



WINTER EXCURSIONS.

FROM Davos many interesting excursions can be made even in winter by those who are not confirmed invalids. The following are some of them :—

1st. To the summit of the Flüela Pass, nearly 8000 feet, either on foot or by sleigh. This is the highest carriage-pass in Switzerland, and looks doubly grand in its winter aspect. The Hospice, at the top of the pass is the stopping-place for the diligence, and refreshments can be obtained. (See page 96—summer.)

2nd. To Dürrenboden at the end of the Dischma-valley, 9 miles, either on foot or by sleigh.

3rd. To Sertig-Doerfli at the end of the Sertig-valley, 7 miles, either on foot or by sleigh.

4th. To Wiesen, twelve miles, through the magnificent gorge of the Züge.

5th. To Thusis, twenty-five miles, spending the night there. The *Rhätia*, kept by Mr. la Malta, who speaks English, is a good second-class hotel ; but the best hotel in the place is the *Via Mala*, which is well conducted. This excursion, which can be made by diligence, would also include a walk or drive of five miles into the wonderful *Via Mala*, which begins at Thusis.

6th. An ascent of the Schiahorn for those who are strong. If the snow is deep the ascent may be found a little difficult by those unaccustomed to climbing. In this case a guide should be taken. The view from the summit is very grand.

7th. An ascent of the Schwarzhorn. Guide necessary. This excursion should not be made excepting by good pedestrians.

WINTER AMUSEMENTS.



ALL who spend a winter in Davos are unanimous in declaring that they were never in a place where so much was offered in the way of out-door pastimes and indoor amusements. Those who come here expecting to spend the season in dull seclusion will be most agreeably surprised by the amount and variety of the social distractions offered to them. Every day is fruitful of engagements both outside and in, and the winter, so interesting and strange, with all its novel characteristics, is already a retrospection ere one realizes that it is more than half done. The fulness and vivacity of existence in Davos is in great part due to the fact that so many of the healthy accompany the invalid of the party, and also that no small number of robust people go there merely to escape the depressing effect of the damp at home, and enjoy distractions only obtainable in a model winter climate. Everything is done to make life easy and agreeable; the roads are kept in the best of order for sleighing, and, even while the snow is falling, the ploughs and levellers are at work, so that the pedestrian can saunter out at will, sure of finding well-kept pathways on which to take exercise. The foot-paths up the mountains are also carefully attended to, the walks to the Schatzalp (1200 feet above the valley), to the Gemsjäger, to Dörfli by the hillside, &c., &c., being as practicable in winter as in summer. The evenings are magnificent, the stars are bright with a brightness unknown to the lowlands, and the moon shines with such brilliancy that the contours of the distant mountains are clear-cut

against the sky. The Edison bow-lights, in use throughout the whole village, encourage evening promenades even when there is no moon above the horizon.

In addition to pedestrian and sleighing excursions, the visitor will be able to find amusement in skating, and in the Canadian exercise of tobogganing. Nearly every year, for a few weeks, there is magnificent skating on the Davos-lake. This is always the case from the time the lake bears until the next heavy snow-fall, which of course puts an end to the pastime. Davos is an excellent place in which to study and then marticulate in the art of skating, for there is good ice on the well-kept rink from November till March, and a club has been formed in connection with the English "National Skating Association." Aspirants can be passed in all the tests by two members of the branch club; their names then appear in anyone of the three classes of the N.S.A. to which their degree of skill entitles them.

The toboggan originally adopted in Davos was the old Swiss "Hand-Schlitten" used by the peasantry. It consists of a small wooden sleigh, the seat being composed of bars of wood, on which a well-stuffed cushion (called saddle) is firmly adjusted. On this you seat yourself, and instead of guiding with the feet, as was formerly the custom, the steering is done by means of pegs (sticks about a foot and a half long, with iron points), which serve the double purpose of steering and of increasing the speed. The "ship of the country" has, however, of late years acquired a dangerous rival in the low, flat "America," ridden head foremost, in a recumbent position.

It will be interesting to state that the word "tobogganing," was introduced by the Gaelic-speaking emigrants to Canada. It is composed of the Celtic or Gaelic "tob"—a surprise, and especially a pleasant surprise; and of

“bogadar”—a rapid motion, a shaking, a sliding; whence “tobogganing,” the rapid and pleasant descent down an ice or snow path.

The toboggan-run at Davos-Platz, known by the name of “the Buol run,” is nearly a mile long. It begins on the steep mountain side, on ground belonging to the hotel Belvedere, and, sweeping round behind hotel Buol, terminates near the highway. Practising is constant on the course, and considerable skill and adroitness are required to “negotiate” successfully the numerous corners. The contests between the different hotels take place on this run, but for the great “International Toboggan Races,” in the month of January, a longer course of two English miles on the highway down to Klosters has been selected. The event is productive of no small excitement and interest, and the billiard room of the hôtel Belvedere is decorated with shields and portraits of such of the winners who have resided in that hotel.

The magnificent evenings alluded to above often tempt people to pursue their favourite pastimes when daylight has long waned. “Moonlight-tobogganing” is looked forward to by all, and the ice-rink is often crowded too. On other occasions artificial lights are in requisition; toboggan processions with torches are very effective, and ice-fêtes are organized—the rink being lit up by Chinese lamps and coloured lights of all kind, while gay and inspiring music still further encourage the performers, who flit about with lamplets in their hands. In fine weather the band plays almost daily on the rink, and from 2 till 3 P.M. the scene is singularly bright and interesting. The amusements indoors, if less unique, are not less varied. Dancing here as elsewhere comes first on the list. There are weekly dances at several of the hotels, and a good many large balls, fancy-

dress réünions, &c., &c., at longer intervals. Private theatricals, amateur concerts, tableaux-vivants, charades recitations, readings, and many other forms of amusement are tried in turn. It is extraordinary how quickly newcomers are drawn into the vortex, and how soon the accomplishments they may possess are discovered, and then displayed for the benefit of the public. Charity here, as elsewhere, forms a good pretext for the organization of mundane pleasures. One or more bazaars annually take place, and a large fancy-fair, uniting all the different nationalities, with variety of physiognomy, manner and mode, not to speak of the babel of all tongues of Europe, produces a scene as picturesque as it is interesting. It ought to be mentioned that real invalids are discouraged from taking an active part in the lively life of the health-resort, but they often play the rôle of spectators, and are allowed to venture out to the neighbouring hotels in the comfortable closed sledges that ply to and fro conveying the guests to the entertainments, at a small rate per head.

There is a good band, which provides the music for the dances, and also gives very creditable concerts from a large and varied repertoire. A very fair German theatrical company performs several times a week on the handsome stage of the Conversations-Saal.

More intellectual tastes are also catered for in Davos. There is an English Literary Society that holds meetings once a fortnight, where papers of no mean merit are read, and, in addition to the libraries with which most of the hotels are provided, there is an English library, with a very excellent selection of books. "The English Colony" has also organized a Photographic Society. In fact, the place now offers all the resources and amenities that form the basis of attractive social life.


As regards young people of both sexes, parents and guardians need be under no apprehension about their education. In this respect Davos-Platz offers more advantages than most places. Professors of all the sciences, teachers of languages, both ancient and modern, drawing and music masters abound, and there are two good German schools for boys, and a seminary for young ladies.

Three newspapers are printed in Davos-Platz. The *Davoser Zeitung* is a political paper; the *Davoser Blätter* for the visitors, and dealing exclusively with the health-resort, is edited in German, but contains the news of the week in an English translation, which, however, is often "English as she is spoke." A new paper called the *Davos Courier*, printed entirely in English, and intended for the English Colony is edited by an old visitor to the place. It is admirably got up, and does credit to the intelligence and enterprise of its proprietor.

English papers should be ordered direct from England. The postage on most papers, including the *Graphic*, *Illustrated London News*, &c., is one penny from the United Kingdom.



DIETARY SCALE.

T all the hotels the dietary scale is, as nearly as possible, alike. It consists of three meals a day.

BREAKFAST,

FROM SEVEN TO NINE,

Consists of coffee, tea, or cocoa, with bread and butter and so-called honey. The latter, however, is a villainous chemical compound, found upon the table of nearly every hotel in Switzerland. (See our special Analysis.) Nearly every ounce of real honey produced in Switzerland is exported.* New milk fresh from the cow is brought to the bedrooms, if ordered, at about seven in the morning and four in the afternoon. The usual charge is twenty centimes (twopence) per glass.

LUNCHEON,

ONE O'CLOCK,

Soup, two meats, vegetables and cheese or pudding.

DINNER,

HALF-PAST SIX O'CLOCK,


Soup, fish occasionally, beef or mutton, one or more entrées, vegetables, the inevitable *poulet rôti* and salad, with pudding and dessert.

* At the Hotels Belvedere, D'Angleterre, and Victoria, *real* honey is put on the table.

On the whole the food is good, but necessarily there is so little variation that it becomes monotonous after a time. The beef and mutton, of course, will not compare with our Scotch and Southdown, and English people who know what good puddings and pies are will scarcely relish Swiss pastry. As we, however, are considered by foreigners to be such barbarous cooks, it may be heresy in the eyes of some people (especially those who have never been abroad) to take exception to Continental cooking.



THE AIR OF DAVOS.

HE question of the quality, density, or rarity of the atmosphere is always the first thing to be considered in connection with an invalid resort. Knowing the importance and interest attaching to this subject, we have made a special study of the Davos air, to the quality of which, in an eminent degree, the place is indebted for its fame.

The chemical composition of the atmosphere in which we live shows it to consist in round numbers of 21 volumes of oxygen to 79 of nitrogen, together with aqueous vapour, a small and slightly varying amount of carbonic acid, traces of ammoniacal salts, nitric acid, and a substance termed ozone. What chemical or physical methods of research reveal beyond them may be looked upon as foreign to it.

An important physical property of air, and one conducing largely to the well-being of both animal and plant life, is the moisture-retaining quality. Air holds aqueous vapours between its particles much as a sponge does water. It can, however, only retain a fixed quantity, dependent on its temperature at the time. When all the interstices supposed to exist between its molecules are so charged with vapour that the least fall in temperature causes the previously invisible vapour to appear as mist, the air is saturated, whilst the temperature at which this mist is seen is called the "*dew point*."

The lower the temperature of the air the closer does it contract, and in so doing squeezes out some of the moisture it previously held.

A high temperature, on the other hand, promotes expan-

sion, by which the vapour-retaining power is augmented, and it is to this latter property in a great measure that warm and expanded air is indebted for its ability to remove moisture from wet surfaces over which it passes.

The vapour capacity of air for different temperatures, and under a normal barometric pressure of 30 inches, has been made the subject of inquiry by various experimenters, who have found the standard volume of air, viz., a cubic foot, to hold—

At 30° F.,	...	...	Moisture, 2.0 grains.
At 40° F.,	...	...	" 2.86 "
At 50° F.,	...	...	" 4.10 "
At 60° F.,	...	...	" 5.77 "
At 70° F.,	...	...	" 8.01 "

These numbers represent the weight of *invisible vapour* which the standard volume can hold in suspension at the above temperatures. When humidity of the air is spoken of, the term is a relative one, and is used to express comparative wetness or dryness. Taking the number 100 as the term for complete saturation, any degree of wetness can be expressed as a percentage by dividing the weight of vapour actually found by the weight which would have been found had the air been saturated. The factors for such calculations are obtained from the readings of "dry" and "wet bulb" thermometers so exposed as to be out of the reach of solar or terrestrial heat.

At Davos, when we collected our samples of air for analysis, the temperature on one occasion was 35° F., and the humidity 54 per cent., which, by calculation, gives 1.34 grains as the weight of water per cubic foot. This was on a bright clear day early in February, and the air still. A standard barometer registered 629.5 m.m. Two principal causes

operate to make the valley of Davos warm—namely, an absence of moist wind, coupled with the accession of temperature the air receives by the sun's rays reflected from the snow, as well as the direct ones.

Passing to the other gaseous component of the atmosphere—viz., the carbonic acid—its amount is not uniform for all places and seasons, though the variation is not very considerable, and is affected chiefly by meteorological and other circumstances. With a low temperature the carbonic acid is said to be slightly higher than at other times, whilst the nearness of large surfaces of water to the place of observation influences the quantity. Dr. Thorpe, in a communication to the Chemical Society some short time ago, has shown sea air to be less rich in this constituent than that on land. His number is 3 volumes per 10,000 of air, whilst a mean of many observations by other experimenters gives 4·04 volumes for that of land air. The air of hilly districts in Scotland appears, from Dr. Angus Smith's researches,* to contain 3·36 volumes per 10,000. In towns, where coal is burnt, more carbonic acid will be found than in country districts, since this gas is a large constituent of burnt fuel—the air of Glasgow containing, for example, 5·02, and London 4·39. Animal respiration must be a factor also. So far as we know, then, a little carbonic acid in the air is not injurious, but it is otherwise when the amount is large, giving rise to a feeling of faintness and other unpleasant symptoms. We see, then, why ill-ventilated rooms do harm, not so much to the robust, however, as to the weak and ailing, whose vitality having been previously lowered by sickness are on that account less fitted to withstand impure air.

We may mention in passing that air in motion transports pollen and seeds of plants to suitable soils, and, as evidence,

* "Air and Rain," Longmans.

showing the power of the air to distribute, we are informed that sand and some forms of diatoms have been met with on the peaks around Davos, supposed to have been brought thither from the dry and exposed tracts of the African Continent. As these are found after the winter's snowfall, their origin cannot be local.

Probably not a single specimen of air could be collected entirely free from motes and floating particles, unless special means are taken to exclude them. Such a refinement of air is possible by filtration through wool. Air, too, after long repose, is found to deposit its floating matter. In this state Dr. Tyndall calls it *optically* pure, since it can no longer scatter rays of light. Indeed, it is this scattering of the rays of light by dust which makes the track of the former visible. In a general sense, then, mountain air will be purer than that of the plains unless some local cause renders it less so. Modern speculation, however, on what is hurtful to mankind concerns itself more especially with the microscope and unweighable, with those "germs of things latent in the air," spoken of by Bishop Berkeley as the "sources of corruption and generation."

Now, recent discoveries show that most, if not all, air contains matter known as "Free" and "Albumenoid" ammonia, which, being given off by animal substances in a state of decay, is evidence of an impurity they engender. It therefore follows that by an examination of the air of different localities for ammonia, we can compare their degrees of cleanliness. A method embodying this principle has been in use some years for potable water. Mr. Alfred Wanklyn put it in a good and workable shape for the purpose, whilst Dr. Angus Smith laid it much under contribution in his researches on the air of towns, and was the first to do so. By a plan of washing a known volume

of air with pure water, and subsequent analysis of the washings, Dr. Smith obtained some highly interesting and important data. Country air he found freer from ammonia than that in towns. Moreover, that town air is not the same in all parts, but that gradations of cleanliness are perceptibly dependent on the openness or closeness of the situation where the air is collected, the proximity to it of middens, offal heaps, and the like.

Taking "albumenoid ammonia," then, as a criterion, whereby to gauge contamination of a particular kind, it is reasonable to expect a less amount in the air of mountainous districts than in that of plains, since the latter must for obvious reasons be the abode where mankind, in the aggregate, will seek his means of life and daily occupation. The experiments we were able to make at Davos show a rather higher reading for "free ammonia" than was expected, though this may be accounted for by the stillness of the air, and that what small amount of smoke there is in the valley lies longer than it would do in a more exposed situation. The figures are given just as they were obtained, but it must be remembered the ammonia process does not lay claim to a high degree of scientific accuracy, and had we been able to increase the number of our experiments, the "mean" readings would, no doubt, have been considerably less. The information a method of this kind will convey is such as to enable us to make a comparison between different localities, and to tell us in which locality the air is best.

A stoppered bottle was used for washing the air with pure water. Its capacity was previously ascertained by calibration, corrections being made for the air's temperature and pressure at the times of the washing. Approximately the capacity was the tenth of a cubic foot. A portable aspirator served to remove the washed air and allow fresh

to enter. The air was changed a hundred times, so that about ten cubic feet was taken for each experiment.

No. of Expt	Where Obtained.	Free Ammonia. Grains per Million Cubic Feet of Air.	Albumenoid Ammonia. Grains per Million Cubic Feet of Air.
1.	On an exposed mountain side, some few hundred feet higher than Davos, and three miles distant, to S.W. Wind slight N.E.	16·046	29·183
2.	Same place a week later. Wind N.E. Air current slight.	22·501	26·955
3.	Same place on following day.	20·650	27·342
4.	In main Street and open places from Boul Hotel to Post Office, including district from Strela Hotel to Berg-adler. Air still.	58·139	24·730
*5.	Do.	30·519	27·955
6.	Do.	31·410	49·229
7.	Do.	38·092	53·684
8.	Do.	33·637	51·456
9.	Do.	26·955	31·410
10.	Near Landwasser and skating rink, including neighbourhood and stables and gas works ; an odour was perceptible, and there was mist along the river.	66·674	69·770

* Air for expts. 5, 6, 7, 8, 9, was collected at various times during the winter.

No. of Expt.	Where Obtained.	Free Ammonia. Grains per Million Cubic Feet of Air.	Albumenoid Ammonia Grains per Million Cubic Feet of Air.
11.	Do. Day very clear and cold ; ice crystals were seen in the wash water, when the bottle was at rest a few moments.	62.593	67.048
12.	Half the total quantity was washed in a close spot near the Rathhaus. A slaughter house was distant 30 yards. The remainder was taken as in No. 10.	68.607	67.939

SUMMARY OF RESULTS.

	Free Ammonia. Grains per Million Cubic Feet of Air.	Albumenoid Ammonia. Grains per Million Cubic Feet.
Mountain sides,	16.046 22.501 20.650	29.183 26.955 27.342
Mean,	19.732	27.826
Streets and other places,	58.139 30.519 31.410 38.092 33.637 26.955	24.730 27.955 49.229 53.684 51.456 31.410
Mean,	36.458	39.744
Close and other places,	66.674 62.593 68.607	69.770 67.048 67.939
Mean,	65.958	68.252

The following figures are taken from "Air and Rain," not so much for purposes of close comparison with ours—which would be unfair, since Dr. Smith's relate exclusively to town air—but to show how competent is the ammonia method to distinguish between air which is pure, air of good quality, and unquestionably bad air. By bad air we mean bad in that it associates with what is hurtful, and not merely that it offends the sense of smell. When it does so we feel we are in doubtful company, and chemical analysis would soon confirm our suspicions:—


Air Obtained from	Number of Experiments Made.	Free Ammonia Grains per Million Cubic Feet.	Albumenoid Ammonia. Grains per Million Cubic Feet
		Average.	Average.
London,	18	26·780	65·947
Glasgow,	4	34·169	133·264
A bedroom,	3	44·305	104·118
Inside and outside a } Manchester office, }	10	53·582	116·544
Underground railway } (Metropolitan), }	2	31·561	163·167
A midden,	3	146·911	181·524

From Dr. Angus Smith's figures the reader will see that the air of London is pure as compared with Glasgow, which probably has the worst air in the kingdom. Our own tables in reference to Davos go to prove the justness of our strictures on the want of sanitary attention, to which we have alluded; for we may venture to assert that whatever impurity there was in the Davos air was due entirely to the refuge and contaminating excreta from the shippens which were at the time we made these experiments allowed to lie

about on and near the road. These remarks, of course applied to the condition of things that existed at the time we made our experiments. Unfortunately we have not been able to make any fresh tests of the atmosphere since the drainage works have been completed, but we do not hesitate to say that the causes of which we complained having been removed, the atmosphere would now be found perfectly free from any injurious influences.



THE WATER OF DAVOS.

T is difficult to decide whether pure air or pure water is of the first importance in a health resort, and it may truly be said of some places, only too largely frequented, there is "water, water everywhere, but not a drop to drink." Fortunately, we are able to speak favourably of Davos as regards its water also. The belief that typhoid fever is communicated through the agency of water, though now widely accepted, is one of but recent date. Numerous cases are on record where an outbreak has been distinctly traced to a contamination of the household supply by sewer gas. A notable example of the way in which the zymotic matter can be distributed and sown by running water occurred at the village of Lausen, near Basle, in Switzerland, when a large proportion of its inhabitants were smitten with typhoid. The particulars of this case are so pregnant with interest that we take the liberty of transcribing Dr. Frankland's verbatim account of it, which appeared in the pages of the journal of the Chemical Society, vol. 29.

He says—"In this healthy village (Lausen) which had never within the memory of man been visited by epidemic typhoid, and in which even a single sporadic case had not occurred for many years, there broke out, in August, 1872, an epidemic which simultaneously attacked a large proportion of the inhabitants. About a mile south of Lausen, and separated from it by the mountainous ridge of Stockhalden, lies a small parallel valley—the Förlirthal. In an isolated farmhouse situated in this valley, a farmer who had just returned from a long journey was attacked by typhoid fever on the 10th of June. During the next two months three other cases occurred in the same house, viz., a girl, who was attacked on the 10th of July, and the farmer's wife and their son, who sickened in August. The inhabitants of Lausen were entirely ignorant of what had occurred at

this solitary mountain farm, cut off as it was from all communication with the rest of the world. On the 7th of August ten of the villagers were suddenly struck down by typhoid fever, whilst during the next nine days the number of cases had already increased to 57, out of a population of 780 persons living in 90 houses. In the first four weeks the number of cases had reached 100 (or above 12 per cent. of the population); and altogether to the close of the epidemic, at the end of October, 130 (or 17 per cent. of the population) were attacked, besides 14 children who were infected at Lausen during their summer holidays, and became ill on their return to schools in other localities.

"The fever cases were pretty evenly distributed throughout the entire village; but those houses, six in number, which were supplied with water from their own private wells, and not from the public fountains, were entirely exempt. This remarkable difference naturally led to a suspicion that the public water supply was connected with the cause of the epidemic, although the apparently immaculate source of this supply seemed to negative any such suspicion. The water came from a spring situated at the foot of the adjacent Stockhalden ridge. It was there received in a tank lined with brickwork, and carefully protected from pollution; nevertheless, a careful investigation into the source of this spring placed beyond all doubt the origin of the infection.

"Ten years previously it had been proved that direct water communication through the intervening mountain existed between a spring and a brook in the Fürlerthal flowing past the farmhouse in which the typhoid cases occurred. At that time there was spontaneously formed, by the giving way of the soil a short distance below the farmhouse and close to the brook, a hole about 8 feet deep and 3 feet in diameter, at the bottom of which a moderate

stream of clear water was observed to be flowing. As an experiment, the whole of the brook water was diverted into this hole, at the bottom of which it entirely disappeared ; but in an hour or two the spring at Lausen, at that time nearly dry from a long drought, overflowed with an abundance of water, which was turbid at first, but afterwards clear ; and this was continued until the Fürler brook was again confined to its bed. It was, however, afterwards noticed that whenever the meadows below this hole were irrigated with the water of the Fürler brook, the volume of Lausen water supply became greatly augmented a few hours afterwards. Now this irrigation, practised every year, was carried on in the year of the epidemic from the middle to the end of July—the brook being polluted by the dejections of the typhoid patients ; for it was in direct communication with the closets and dunghcups of the infected house, whilst all the chamber slops were emptied directly into it, and the dirty linen of the patients washed in it.

“Soon after the irrigation had begun, the water supplied to Lausen was at first turbid, acquired an unpleasant taste, and increased in volume. About three weeks after the commencement of the irrigation, the sudden outburst of typhoid fever in Lausen occurred.”

Dr. Hägler, of Bâle, who investigated the cause of this irruption, and the way in which the complaint had been spread, was able, by several well executed experiments, to adduce still further evidence of the existence of a direct communication between the Fürler brook and the water supplying the public fountain in Lausen. We shall not describe them, but refer those interested to Dr. Frankland's account, given in his memoir “On the Analysis of Potable Waters,” *loc cit.*

The outbreak of fever at Lausen is very instructive. We

have first the importation and planting of the germinal matter by the farmer in his own person in his native homestead ; next, evidence of its seed-like character, judging from the manner in which the members of the farmer's family became affected ; whilst, lastly, there is the conveyance of the zymotic matter by water carriage to an entirely fresh area, wherein those fell victims to typhoid, and those only, who had the misfortune to drink of the water. There is here a chain of events riveted together in a firm, logical sequence, the value of which, as evidence that typhoid may be sown in the human body with as great certainty of a crop as when wheat is sown in a field, must, we think, be clear to everyone.

A chief object, then, of an analysis of water for dietetic purposes must be to detect in it such impurities as are calculated to spread disease. The ammonia process is useful for this purpose, and will enable us to decide the question with some certainty. Knowing the value of a water analysis, we went to considerable trouble to procure samples from Davos, which we have analysed qualitatively and quantitatively. The general composition of the water shows the saline matter to consist chiefly of the carbonates of lime and magnesia, with some sulphate of lime. They failed to yield either "free" or "albumenoid" ammonia when examined by the method of Messrs. Wanklyn and Chapman, nor were nitrates found. The chlorides, too, are in very small amount. They cannot, therefore, presumably, have received any sewage matter. The water used by the inhabitants is collected from small streams rising in the adjacent mountain-sides, and is conducted to their doors from the higher to the lower level by iron pipes, and in some places, for the greater distance, by primitive wooden conduits common throughout Switzerland.

The "total solids" yielded on evaporation varied from nine to eleven grains per imperial gallon. The following is an analysis of the water used for the table at the Hotel Belvedere. It flows from an iron pipe fixed in a wall on the main road, close to the hotel :—

	Grains per Imperial Gallon.
Carbonate of Lime,	4·964
Carbonate of Magnesia,	4·506
Sulphate of Lime,	0·931
Silica with Oxide of Iron,	0·182
Chlorine (calculated as Chloride of Sodium),	0·232
	<hr/>
	10·815

Solids by evaporation, 11·10.

Whether or not the stream received much or little contribution from melting snow in the day-time we had no means of judging, though, probably, some information could have been gathered on this head had a second analysis been made of the water collected at midnight. It is well known that the flow of water in rivers having their sources in glaciers is less at night than in the day-time, as the air temperature reaches its minimum at night. The same thing, no doubt, applies to Alpine streams in winter. Taking this into consideration, the total solids of the Davos water would be higher in the summer season than when we collected our samples, since they would not then receive the dilution due to melting snow, in which no salts are present.

The somewhat considerable proportion of magnesium carbonate will be derived from the Dolomitic limestone, which is plentiful in places along the valley.

The other samples of water taken from various sources in the valley have yielded results so nearly similar to the one mentioned that we have not deemed it necessary to insert the tables here, and the general inference to be drawn is that all the water in the valley is exceptionally pure.

MILK SUPPLIED TO DAVOS.

NEXT to the water supply, pure milk ranks highest in importance, more especially where it is used by invalids in large quantities. We have, therefore, given this subject careful attention, and the following specimens of cows' milk were analysed. Of the history of those sold to us at hotels or restaurants we knew nothing. The rest were collected at different farms at the evening milking, we being present. We procured equal volumes of the supply from each beast, and having mixed them, we set the bulk aside, and labelled it at once. Thus, in No. 1, the sample consisted of equal volumes of the milk of each of twelve cows. It was not analysed in Davos, but in Manchester, whither it was despatched the same evening, after being previously frozen, and the bottles carefully wrapped in flannel and packed in hay.

The time occupied in transit was four days. The precaution of the preliminary freezing, coupled with the low temperature prevailing in England when the parcel arrived, so far delayed the decomposition of the milk that it was quite in a fit state for analysis.

We may remark that the Swiss cattle yielding the milk were all very small beasts, and looked poorly fed, as was no doubt the case, since we understand that the Swiss peasant, in the exercise of his frugality and habits of thrift, restricts their diet almost exclusively to hay.

The beasts enjoy but little fresh air, and take their fill of it when driven to water, generally in the morning and evening; but frequently, in very bad weather, they are kept in the darkened chalets for days together. The air of a

Swiss shippon is very oppressive, for the ventilation is always bad, and the temperature exceedingly high.

No. of Sample.	Description.	Total Solids.	"Solids not Fat."	Fat.	Ash.
1.	Equal vols. from three farms ; 12 cows.	12·84	9·21	3·63	·73
2.	Do. two farms ; 10 cows.	12·76	9·15	3·61	·76
3.	Sample supplied in the rooms of a hotel.	11·72	9·06	2·66	·73
4.	Hotel Belvedere, supplied in a room.	11·40	8·57	2·83	·74
5.	Hotel Zür Post Restaurant.	12·10	8·87	3·23	·78
6.	Kurhaus Milch Halle.	11·81	9·08	2·73	·73
7.	A farm ; 4 cows.	11·46	9·07	2·39	·77
8.	A farm supplying hotels ; 4 cows.	11·65	9·17	2·48	·78
9.	Two farms ; 8 cows.	12·67	9·20	3·47	·79
10.	A bottle of milk asked for at a farm at mid-day.	15·59	8·92	6·67	·70

Sample No. 10 was served by a herd-boy who went alone into the dairy. What he gave was in great part cream, as may be seen from the high percentage of fat and total solids. Taking the average of Nos. 1, 2, 8, and 9, representing the milk of 34 cows for the afternoon milking, the numbers are—

Total solids, ...	...	...	...	...	12·47 per cent.
Solids not fat, ...	...	...	...	...	9·17
Fat, ...	...	...	...	...	3·29
Ash, ...	...	...	...	...	0·76

The "solids not fat" consist of casein and milk sugar with

phosphate of lime. By adding the water natural to milk, the centesimal composition will then be—

Casein with milk sugar,	...	...	...	...	8.41
Fat,	...	...	...	...	3.29
Salts consisting mainly of Phosphates,	...	...	...	...	0.76
Water, ...	...	...	...	...	87.54
					<hr/> 100.000

Observations on the composition of genuine milk show it to be remarkably uniform. This remark applies to the milk of a herd of cows, and not that of individual beasts. The "solids not fat" very rarely fall as low as 9 per cent., whilst the average is considered to be 9.3. The fat, however, is liable to a greater variation. Now, it is this constancy of the proportion of "solids not fat" in average milk which enables the analyst to decide to what extent the practice of watering has been carried, for it is clear that to add water is to diminish the proportion considerably. A sample of milk taken in Manchester was found to contain only 7.44 per cent. of "solids not fat," and 2.85 of fat. Since 100 parts of milk, if genuine, should contain 9.3 of "solids not fat,"

$$100 \times 7.44$$

$$9.3$$

will give the quantity

of genuine milk used to make 100 of the above watered article, which, in this case, is 80 parts; so that the milk-seller must have added 20 of water to make up the difference.

The analysis of sample No. 4, from Hotel Belvedere, therefore suggests that water, in a minute quantity, had been mixed with the milk, as does that also from the Post Restaurant.

It is highly probable, however, that neither sample had been "tampered" with, but was milk collected from single cows ; for it is a practice in the valley, as it is elsewhere, notably at the Milch Anstalt in Baden-Baden, to fill a glass with milk from one cow, and to carry glasses so filled in frames to the place of consumption. No two glasses of milk collected in this manner will be comparable, and it would only be from the average analysis of many that reliable data could be secured.



BUTTER.

PASSING now to the butter sold in Davos, numerous specimens were collected in the village, from hotels and elsewhere. They were in all cases found to be pure butter. Some had an unpleasant taste and cheesy smell, whilst an examination showed that the butter-milk had not been removed as carefully as it should have been.

The following are analyses of two samples, which show their general composition :—

	No. 1.
Sp. gr. of the "Butter Fat" at 205° F, 	0·871
Insoluble fatty acids per cent. in the "Butter Fat,"	85·91

COMPOSITION OF THE BUTTER.

Moisture,	..	...	...	...	...	...	9·910
Fat, ...	...	...	...	...	...	...	88·480
Casein (curd),	...	...	...	...	...	...	1·363
Salt, ...	...	...	...	..	...	...	0·067
							<hr/> 99·820

	No. 2.
Sp. gr. of the "Butter Fat" at 205° F., 	0·870
Insoluble fatty acids per cent., 	85·46

COMPOSITION.

Moisture,	...	...	...	...	...	...	9·520
Fat, ...	...	...	...	..	...	...	88·960
Casein (curd),	...	...	...	...	...	...	1·223
Salt, ...	...	..	...	...	...	...	0·096
							<hr/> 99·799

It will not be out of place here to state that what is known as "Butterine," or "Oleomargarine," a factitious

substitute for butter, is made by churning clarified animal fats with milk.

By this means the fat acquires somewhat the taste and odour of butter when freshly prepared. It is then salted, and suitably coloured.

We are pleased to say that we did not meet with this article at Davos, though it is largely manufactured on the Continent as well as at home, and the trade in it is said to be a profitable one.

“Butterine” is known by the specific gravity of the fat, which is lower than that of genuine butter, as well as by the much higher percentage of “Insoluble Fatty Acids.”

Some English samples yielded over 95 per cent. of these acids, whilst the fat had a specific gravity of about 0.860 at 205° F.



BEERS.

THE beers usually drunk in Davos are, for the most part, of foreign origin, and preference seems to be given to the German and Bohemian "brews," though Guinness's stout and Bass and Allsopp's ales are procurable in the hotels, but the price, of course, is high, and it is doubtful whether the lighter kinds are not preferable, especially for invalids. Our samples were collected at various places. We may remark, *en passant*, that German brewers make an excellent description with malt and hops, differing from our English infusion in the manner of its preparation. Unlike ours, much of the German beer is not fermented with "top" but with what is known as "under" yeast, whilst the time occupied in the fermentation lasts much longer, being retarded by the use of ice in the cellars where the casks are "laagered." The characteristic flavour of the "Bock" beers is said to be caused by an aromatic principle peculiar to German hops. The following are analyses of beer most in request by the visitors. The numbers represent parts by weight in 100 parts by volume :—

	Ulmer Bock.	Bock.	Erlanger Bock from Kurhaus Hotel.
Sp. gr.	1·015	1·031	1·019
Alcohol by volume,	6·200	5·800	5·700
Carbonic Acid,	0·245	0·379	0·446
Acetic Acid,	0·072	0·102	0·060
Sugar,	0·800	1·800	1·040
Ash,	0·256	0·240	0·260
Total Solids,	5·410	7·014	5·664
Water and other constituents not determined.			

							A Lager Beer.
Sp. gr., ... ..	...	...	...	...	...	...	1·019
Alcohol by volume, ... ..	...	...	...	...	...	...	5·500
Carbonic Acid, ... ..	...	...	...	...	...	...	0·267
Acetic Acid, ... ..	...	...	...	...	...	...	0·078
Sugar, ... ..	...	...	...	...	...	...	1·250
Ash, ... ..	...	...	...	...	...	...	0·230
Total Solids, ... ..	...	...	...	...	...	...	6·234
Water and other constituents not determined.							

We contrast the above with two analyses of English beer and one of bottled "Pilsener."

	English Draught Bitter Ale from a Manchester Hotel.	English Mild Ale.
Sp. gr.,	1·014	1·018
Alcohol by volume,	5·300	4·300
Carbonic Acid,	0·267	0·270
Acetic Acid,	0·048	0·120
Sugar,	0·800	2·500
Ash,	0·308	0·356
Total Solids,	4·760	6·587
Water and other constituents not determined.		

							Pilsener Beer in Bottle.
Sp. gr., ... ..	...	...	...	...	...	...	1·007
Alcohol by volume, ... ..	...	...	...	...	...	...	2·900
Carbonic Acid, ... ..	...	...	...	...	...	...	0·334
Acetic Acid, ... ..	...	...	...	...	...	...	0·054
Sugar, ... ..	...	...	...	...	...	...	0·600
Ash, ... ..	...	...	...	...	...	...	0·152
Total Solids, ... ..	...	...	...	...	...	...	3·324
Water and other constituents not determined.							

The ash of beer consists of phosphates extracted from the malt, together with the saline constituents natural to the water with which the beer is made. In some common

public-house beers in England the ash is higher than in the above samples, and contains much common salt, added, we are informed, to promote thirst, thereby tending to an increased consumption, and consequently larger profit to the publican.


BREAD.

SEVERAL samples of bread when analysed were found free from alum, nor was there any mineral weighing substance present. The average moisture in the small rolls served at hotel tables was 34·8 per cent., and the ash only 0·946, of which salt formed the chief part. The dark brown slightly sour bread contained 33·3 of moisture, and gave an incineration 2·04 of ash.

We are inclined to think that bread made in the English fashion would be more suitable for invalids than sponge rolls, but foreign bakers should not imagine that "English fashion" simply means a *square loaf*. Something more than this is wanted.



ANALYSIS OF THE SO-CALLED SWISS HONEY.

N most of the hotel tables in Davos, and, in fact, generally speaking, throughout Switzerland, will be found a light, brown-coloured compound, having the consistency and appearance of what is known in England as "Golden Syrup." The compound in question is, by a pleasant fiction, called *honey*; and the majority of people when partaking of it believe that they are eating *real Swiss honey*. The stuff, however, is a fraud and a sham, and does not contain a particle of honey. It is manufactured in large quantities in various parts of Switzerland, and the subjoined analysis will reveal its true character; and though it may not be absolutely deleterious, it certainly cannot be recommended as an article that should enter into the dietary scale of an invalid; in fact, there may be conditions under which it would prove decidedly harmful, and if for no other reason than that it is an imposition visitors should carefully eschew it.

ANALYSIS OF THE SHAM SWISS HONEY.

The analysis was made by Mr. Philip Holland, F.C.S.

Cane Sugar,	...	...	..	...	...	...	30·27
Glucoses,	...	...	...	...	...	...	41·66
Water, ...	...	...	...	...	..	...	26·67
Ash, ..	...	...	...	...	...	...	00·40
							100·00

SAMPLE OF REAL HONEY.

Analysis made by Dr. Hassal, author of "Food, and its Adulterations," &c., &c.

Cane Sugar,	..	...	...	...	..	...	00·94
Glucoses,	...	...	..	...	..	...	79·48
Water, ...	...	...	...	...	..	...	19·56
Ash, ...	...	...	...	..	...	...	00·02
							100·00

In comparing the two samples, the reader will note the marked difference in the quantities of cane sugar and glucoses. In the Swiss there is 30·27 of cane sugar, while the 00·94 in Dr. Hassall's sample was no doubt accidental. Real honey should consist mainly of *glucoses*, which comes from the Greek word *γλυκῦς*, meaning sweet. It is less sweet than cane sugar, and, in fact, is nothing more nor less than the sugar of the flowers from which the bees collect their stores; it can also be extracted from dried grapes and starch, in which case it is called "grape sugar," or "starch sugar."

NOTE.—We have received a communication from Mr. J. C. Coester, proprietor of the Hotel Belvedere, in which he informs us that the "Sham Swiss Honey" is not used in his hotel, but that he supplies his visitors with the genuine article, which he procures from the Canton Schwyz, which is celebrated as a honey producing district. Mr. Carl Denner of the D'Angleterre also writes to us to the same effect.



WINES.

YE now come to the wines which, under the name of "Veltliners," are largely sold in all the hotels. The names of the wines mostly drunk are—Montagner, Sassella, Grumella, and Inferno, and they are grown in the Val Tellina district.* The following analyses are of the red wines. The samples were obtained from Herr Gredig, who is an agent for them at Davos Dörfli.

He informed us that he selected the casks himself in the district where the wine is grown. Samples were bottled in our presence. All are of 1878 vintage, except the Grumello, which is two years older.

It is possible, therefore, that Herr Gredig's wines were the best of the kind to be obtained in the valley—

MONTAGNER.

	Herr Gredig's Selection.	Sample purchased at Hotel Belvedere.
Sp. gr.,	0·9975	0·9975
Alcohol by volume,	10·660	10·580
Total fixed Acid calculated as } Tartaric,	0·840	0·840
Volatile Acid calculated as } Acetic Acid,	0·036	0·030
Bitartrate of Potash.	0·140	0·130
Sugar,	0·300	0·280
Ash,	0·240	0·240
Total Solids at 212° F.,	2·280	2·100
Water and other constituents not determined.		

* The Val Tellina (locally pronounced Veltlin) is a fertile and beautiful valley in Italy, commencing at Colico at the head of Lake Como, and is bounded on the north by the Bernina range of mountains. Sondrio is the capital of the district. The whole valley is celebrated for its wines, and nearly all the inhabitants are engaged in the cultiva-

	Sample purchased at Kurhaus Hotel	Sample purchased at Hotel Zur Post.
Sp. gr.,	0.9982	0.9982
Alcohol by volume,	10.500	10.540
Total fixed Acid calculated as } Tartaric, }	0.705	0.697
Volatile Acid calculated as } Acetic, }	0.084	0.075
Bitartrate of Potash,	0.150	0.120
Sugar,	0.310	0.260
Ash,	0.260	0.220
Total Solids at 212° F.,	2.040	1.810
Water and other constituents not determined.		

HERR GREDIG'S SELECTION.

	Sassella.	Grumello.	Inferno.
Sp. gr.,	0.9975	0.998	0.9975
Alcohol by volume,	11.000	10.830	10.75
Total fixed Acid calculated as } Tartaric, }	0.592	0.675	0.495
Volatile Acid calculated as } Acetic, }	0.030	0.060	0.024
Bitartrate of Potash,	0.094	0.141	0.094
Sugar,	0.280	0.320	0.330
Ash,	0.192	0.258	0.252
Total Solids at 212° F.,	1.970	2.150	1.760
Water and other constituents not determined.			

The above show the general composition of the red wines of the Val Tellina, while the Sassella is highest in alcoholic

tion of the vine. At *Sassella* is a curious old church built on a projecting rock. Figs, grapes, and pomegranates are grown here to perfection; and dominating the village are the snow-clad peaks of *Monte della Disgrazia*. *Morbegno*, near *Colico*, and in the lower part of the valley, produces a great deal of excellent silk. All the Val Tellina wines are cheap and good, but do not seem to keep well out of bottle.

strength. The white wines do not seem so much in demand, judging from their absence from hotel tables. Besides the constituents given in these partial analyses, there are in all wines small quantities of what are termed "compound Æthers" which impart to them a peculiar flavour and bouquet. To determine them would have required very much larger quantities of each specimen than we had at our disposal.

We observed that none of the above wines kept well after being opened in England, mould appearing in about fourteen days.



WINTER THERMOMETRIC OBSERVATIONS ON DAVOS,

BY

DR. FRANKLAND, F.R.S.*

The eminent position which Dr. Frankland, F.R.S., occupies as a scientific man gives peculiar value to his observations, and no apology, therefore, will be needed for inserting the following notes on Davos, which we take from the "Proceedings of the Royal Society," vol. xxii., page 317 :—

. . . The village (Davos-Platz) has of late acquired considerable repute as a climatic sanatorium for persons suffering from diseases of the chest. So rapidly has its reputation grown that while in the winter of 1865-66 only eight patients resided there, during the past season (1872) upwards of three hundred have wintered in the valley. The summer climate of Davos is very similar to that of Pontresina and St. Moritz in the neighbouring high valley of the Engadine—cool and rather windy ; but so soon as the Prättgau and surrounding mountains become thickly, and, for the winter, permanently covered with snow, which usually happens in November, a new set of conditions come into play, and the winter climate becomes exceedingly remarkable. The sky is, as a rule, cloudless, or nearly so, and as the solar rays, though very powerful, are incompetent to melt the snow, they have very little effect upon the temperature either of the valley or its enclosing mountains ; consequently there are no currents of heated air ; and as the valley is well sheltered from more general

* These observations were made in the valley of Davos by Dr. Frankland, in the winter of 1873.

atmospheric movements, an almost uniform calm prevails until the snow melts in spring. According to Dufour's trigonometrical measurements, Davos is 5105 feet above the sea. The measurements of the Swiss Meteorological Society make the height 5413 feet, and my own estimation with an aneroid gave it as 4000 feet above Zürich, or 5352 feet above the sea. The village of Davos is therefore about 500 feet lower than the summit of the Rigi.*

December 21st, 1873.—From behind the sharp peak of the Schwarzhorn the sun rose at the Seehof Hotel, Davos-Dörfli, at 8.35; at Davos-Platz, it did not rise until 9.44. At 10 A.M. the mercurial thermometer with the blackened bulb *in vacuo* showed 111.2° Fah. in the sunshine, and 113° Fah. at 2.50 P.M. At Greenwich the reading on this day with the blackened bulb *in vacuo* placed on the grass in the sunshine were: at 9 A.M. 48.7° Fah.; at 3 A.M. 71.5° Fah.; the maximum for the day being 71.5° Fah.†

December 22nd.—A mercurial thermometer with black glass bulb was laid on the snow at 8 A.M.; twenty minutes later, or 15 minutes before sunrise, it marked—1° Fah. The sky was deep blue and almost perfectly cloudless the whole day. The following thermometrical observations were made on this day:—

I. BLACKENED BULB IN VACUO. IN SUNSHINE.							
A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	
8.45	8.50	9.0	9.45	10.15	10.45	11.15	Noon.
22°C.‡	26°C.	30°C.	37.3°C.	39.3°C.	39.5°C.	41.2°C.	42.5°C.

* More recent observations tend to prove Dr. Frankland's measurement to be the correct one.—Ed.

† The difference in the winter temperature of Davos and London is extraordinary. Mr. Glaisher supplied Dr. Frankland with the corresponding readings for Greenwich when the Doctor made his at Davos.—Ed.

‡ C.—Centigrade.

This thermometer was clamped to an alpenstock at a height of about five feet from the snow in all the observations.

At Greenwich on the same day the readings were with blackened bulb *in vacuo* :—Maximum, $12^{\circ}8$ C. ($55^{\circ}0^{\circ}$ Fah.) ; at 9 A.M., $8^{\circ}5$ C. ($47^{\circ}3^{\circ}$ Fah.) ; at noon, and at 3 P.M. $12^{\circ}8$ C. (55° Fah.)

The maximum *in the shade* was $10^{\circ}4$ C ($50^{\circ}7^{\circ}$ Fah.), and the minimum on the grass *in the shade*— $1^{\circ}7$ C. ($28^{\circ}9^{\circ}$ Fah.).

II.—PLAIN MERCURIAL THERMOMETER WITH BLACK GLASS BULB.
IN SUNSHINE.

A.M.	A.M.	A.M.		P.M.
9.45	10.15	11.15	Noon.	1.45
-1° C.	$0^{\circ}6$ C.	$3^{\circ}3$ C.	$3^{\circ}3$ C.	$7^{\circ}2$ C.

III.—PLAIN MERCURIAL THERMOMETER WITH BLACK BULB.
IN SHADE.

A.M.	A.M.		P.M.
10.15	11.15	Noon.	1.45
-4° C.	-1° C.	-1° C.	$2^{\circ}0$ C.

IV.—PLAIN MERCURIAL THERMOMETER WITH BLACK GLASS BULB,
PLACED IN A BOX LINED WITH PADDED BLACK CLOTH, AND
COVERED WITH PLATE-GLASS A QUARTER OF AN INCH THICK.

A.M.	A.M.		P.M.	P.M.
9.45	10.15	Noon.	12.35	2.0
$75^{\circ}0$ C.	$85^{\circ}0$ C.	$100^{\circ}0$ C.	$102^{\circ}8$ C.	$105^{\circ}0$ C.

Thus in mid-winter the concentrated solar rays at Davos are capable of producing, under favourable circumstances, a temperature of 221° Fah., or 9° Fah. above the boiling point of water at the sea level ; or 21° Fah. above that point at Davos, where I found water to boil at 200° Fah. when the barometer stood at 627.3 millimetres.

The highest temperature in sunshine which I have observed at Davos at noon with blackened bulb *in vacuo*

was $42^{\circ}\cdot 5$ c., which scarcely differs from that read on the Flüela Pass (24th December) at the same hour, viz., $42^{\circ}\cdot 3$ c.

At Greenwich on this day (24th December), with blackened bulb *in vacuo* at noon, the maximum temperature was $18^{\circ}\cdot 6$ c. ($65^{\circ}\cdot 5$ c. Fah.) We have here a difference of as much as $23^{\circ}\cdot 9$ c. between Davos and Greenwich for the same day and hour.

. . . The chief remarkable thing about the observations are, first, the very high sun temperature prevailing contemporaneously with very low air, or shade temperature; and, secondly, the comparative uniformity of the solar heat from sunrise to sunset. Besides the intensity of solar radiation and its comparative uniformity during the day, the rarity and calmness of the air is an important factor amongst the causes of the peculiar climate of Davos



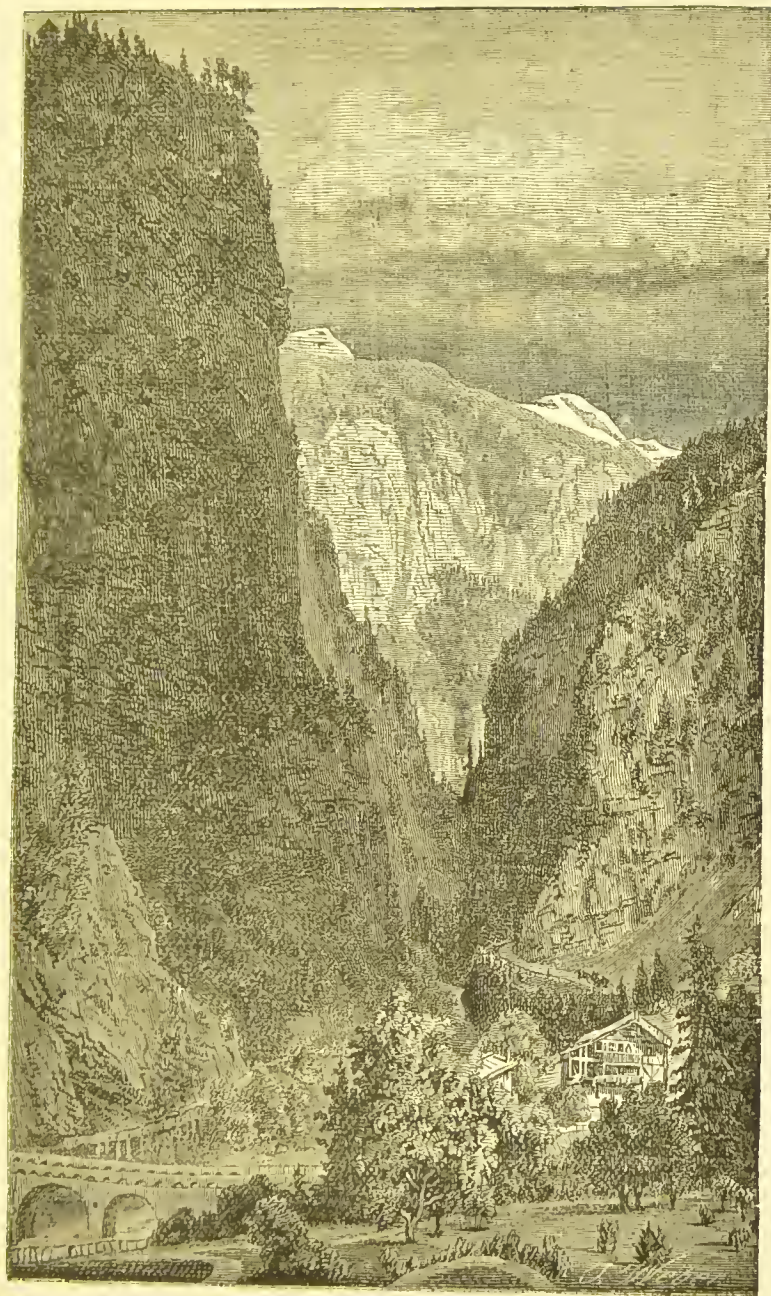
OVER THE ALPS IN WINTER.*

(By the Editor.)

LESS than a hundred years ago a journey across the Alps, even in summer, was looked upon as such a hazardous undertaking that no traveller attempted it unless compelled by stress of circumstances, and only then after solemn reflection, and when every precaution had been taken against highly probable contingencies. It is true that large bodies of troops frequently threaded the passes, but it was always at the cost of many lives. Even as recently as the year 1800, General Macdonald led a division of troops across the Splügen ; but in the course of the terrible march large numbers of the soldiers were swept away by avalanches. Since then, however, the condition of things have somewhat altered. Not that the forces of Nature are different ; but man has brought his skill to bear, and constructed wonderfully engineered roads where formerly only bridle-paths existed.

Being in Davos-Platz many winters ago, I conceived the idea of making a hurried journey into Italy by the renowned Splügen Pass, and returning by the equally renowned Simplon. Not a few people, when they heard of my intention, expressed surprise, and suggested the probability of falls over precipices or destruction by ice-avalanches, which in the winter are more to be dreaded than falls of snow. Undeterred, however, by these dismal forebodings, I left Davos by diligence early one fine morning in January, and travelled to Thusis, which is twenty-five miles from Davos. The route is through some of the most charming of Alpine scenery, and includes the justly cele-

*This article is inserted with a view to afford information to anyone desirous of making the same winter journey, which can be strongly recommended to those in good health.



ENTRANCE TO VIA MALA.

brated Züge Gorge, the Pass Mal, and the Schyn Pass. Thusis, which stands at the entrance to the Via Mala, which is also the commencement of the Splügen, is a quaint Swiss town, situated in a valley, and dominated by a lofty range of snowclad peaks. The town being in direct communication with Italy, wears a semi-Italian air. Sleighs, laden with casks of wine, stand about the streets, and curious fountains here and there tend to increase the impression that one is already on Italian soil. Chiavenna, however, is forty miles away, and the frontier line thirty. The Splügen is the highway between Chiavenna and Thusis, and it may justly be said of this pass that it is one of the grandest and most wonderful in the whole world. It is supposed, on good authority, that the Romans were well acquainted with it, and used it as a means of communication between Italy and Switzerland. At the present time there is a daily post between the two countries *via* the the Splügen, except when the pass is blocked by snowstorms and avalanches.

At half-past seven in the morning I left Thusis in an open sledge. The sun was rising in regal magnificence, and smiting into quivering gold the snowclad peaks that towered up into a turquoise sky. Within ten minutes of leaving the town the Via Mala is entered (see illustration). This is a narrow gorge five miles in length, which runs between walls of rock from 1500 to 2000 feet high. It seems as if, in a far-off age, some mighty cataclysm had shattered the mountains to pieces. Everything is stupendous. Enormous masses of rock overhang the road, and seem as if they only wanted a touch to bring them down with an appalling crash. Lateral openings give one a view of still higher peaks all splintered into the most fantastic outlines. About two miles from Thusis is a long tunnel, which pene-

trates a mighty spur of projecting rock. From the entrance the roaring river, at the bottom of a gorge, is visible, and the retrospect is one of the sternest and most savage grandeur imaginable. But at the second bridge, which spans the ravine, the view is even more imposing, if that be possible. The cliffs almost meet overhead, and 300 feet below the young Rhine thunders, and lashes itself into fury against its confining walls of limestone rock. Soon after leaving this point the *Via Mala* ends, and one is inclined to draw a sigh of relief as he emerges from the sombre gloomy passage into the open valley of Sehams. Nothing could be more impressive than the *Via Mala* under its winter aspect. From its riven walls stupendous masses of ice hang. This ice is formed by water trickling over the rocks, and gradually freezing, until it assumes colossal proportions. I saw one sheet of ice nearly twenty feet in thickness, over a hundred feet high, and eighty feet broad. It hung over the road in a very threatening manner. The imagination may picture what the effect would be if such a mass of ice came down on to the road, and yet this is by no means an infrequent occurrence.

Soon after entering the valley of Sehams we arrive at Zillis, the first village. It is 3061 feet above the sea, and is overshadowed by the immense Piz Beverin, 9843 feet high. From here we pass on through a series of beautiful scenes to Andeer, seven and a half miles from Thusis, where horses are changed. Soon after the road enters the Rofna Ravine, three miles long, which bears some resemblance to the *Via Mala*. When the end of the ravine is reached, a wonderful prospect bursts upon the view as the Alpine landscape of the Rheinwaldthal opens out. Great mountains shut in the valley, the most conspicuous being the Tambohorn, 10,748 feet, which bears on its sides a vast

glacier. When another mile has been traversed we come to the village of Splügen, and here one begins to realise that he is in a world of snow and ice. The vegetation grows scantier, and even the hardy pine-trees struggle for bare existence. Splügen is 4757 feet high, and soon after leaving the hamlet desolation begins. The road winds upwards into a lonely valley, where the snow lies all the year round. The valley is a sort of basin in the very heart of a vast range of peaks and rocky spires, on which human foot has never yet been set. One wonders how he is going to get out of the basin, where never a tree or blade of grass breaks the monotony of the glittering snow ; but presently the road is seen winding up one of the mountains like a writhing serpent. This series of zigzags takes a considerable time to accomplish, and then presently you pass through a long gallery of masonry built to protect the road from avalanches, and when you emerge, behold you are on the summit of the Splügen Pass, 6945 feet above the sea. And what a view is spread around ! The Alps, as I saw them, were glittering in golden light, while above the lapis lazuli sky was without even the suspicion of a cloud. One's breath was almost taken away by the inconceivable magnificence of the scene. It was a panorama of great extent, embracing range upon range of splendid snowclad mountains ; while far away in the blue distance, where mass upon mass of rocky aiguilles rise, the town of Chiavenna nestles, though the town itself cannot be seen from this spot.

A little beyond the summit the first *cantoniera* or refuge is passed, and then comes the *dogana* or Italian custom-house. It is an awfully lonely situation this, and in the winter the snow often reaches to the windows of the first floor. In the four highest houses of refuge bells are kept

constantly ringing, as a guide to travellers during snow-storms. The road now descends gradually by numberless zigzags along the east slope of the mountains; and so dangerous is this part of the way that within a short distance there are no fewer than three galleries, 249, 228, and 550 yards respectively in length. They are constructed of massive masonry, and covered with sloping roofs, supported by pillars, to enable the snow to slide off. They are lighted by apertures in the side next the ravine. As the third gallery is quitted, a view is obtained of the little village of Isola, which is far down in the valley below. It looks like a number of toy houses that have been carelessly shaken out of a box. It is dangerously situated at the base of a stupendous mountain, and has been frequently swept away by avalanches, but as frequently rebuilt by the poor inhabitants, who cling with strange fidelity to their native village, which may be said to stand ever on the verge of destruction. Still descending, we come to more galleries. The scenery grows wilder and grander, and presently the road is observed winding along the edge of precipices; while a profound gorge, walled in by mighty walls of rock and giant mountains, stretches away and away as far as the eye can reach. Soon we come to another gallery, built on the extreme verge of a frightful precipice. The scenery now is strangely weird and yet sublime. There are great heights, there are wonderful depths. Nature here asserts her supremacy, and defies man to tame her. Out of the face of a perpendicular wall of rock the road is carved hereabouts; and here there are three galleries, exactly one above the other, owing to the twisting of the road. When the traveller has passed through the first, he drops down and goes through the second, and so on to the third. It is perfectly marvellous

how the road was ever constructed in the face of such obstacles. On the opposite side of the profound gorge is the wonderful Tambohorn, with its enormous glacier. This mountain is nearly 11,000 feet high. Down and down goes the road, and the mountains become so awfully precipitous that their black repellant-looking rocks are swept clear of snow. At Pianazzo, a scattered hamlet inhabited by poor peasants, there is a magnificent waterfall. The water comes down a gorge, passes under the road, which is carried upon a stone bridge, and then throws itself in one leap over a perpendicular wall of rock that plunges down 700 feet. When I saw it, gigantic pillars of ice had formed up the sides, and below was a huge glacier. The roar of the water was deafening.

The next village is Campo Dolcino, which is 3553 feet above the sea. Here the open sledge was exchanged for a diligence on wheels. Looking ahead, the perspective is bounded by a giant range of snow-peaks, and all around are terrific precipices and black mountains, their sides deeply riven and gashed. The road still winds down, and is protected, on the precipice side, by a massive arched wall. The four powerful horses are "tooled" with infinite skill round the sharp curves, for these mountain-drivers have no rivals. For two or three miles the way is through a strange wilderness, a wreck of mountains. The slopes are strewn with masses of rock and boulders of every shape and size. They are piled up in some places until they resemble the ruins of a colossal temple. Here, again, is what seems to be a Druidical circle, and there are the crumbling remains of some great castle. This is one of the most curious spots to be found in Italy. It is a fantastic, grim, weird region, the haunt of the mountain demons. There are hundreds of thousands of boulders

scattered about. They are all black, and perfectly bare of vegetation. Only here and there does a patch of snow relieve the forbidding sombreness of the shattered mountains ; and as one looks up and sees how the tops of these peaks have been whirled off by the silent yet mighty forces of Nature, he is led to speculate whether the disintegration which is going on in mountainous regions will not, in some far off age, reduce the mountains to mere knolls. This Liro Valley, as it is called, is certainly one of the most remarkable places I have ever seen. It is a region of chaos, of ruin, of death. There is literally an infernal weirdness about the scene that at once suggests Dante's pen and Doré's pencil ; and yet it is very wonderful, very grand, very fascinating, and when once beheld can never be forgotten. One could imagine it being the battlefield of giants, who had torn up the mountains to hurl them at each other. Presently, as we advance, trees appear ; life begins in the shape of a pleasing and vividly green species of gorse ; lichens and moss cling to the black rocks, chestnuts and vines tell of human habitations and man's industry ; and then, as only the last faint rose-flush of the dying day lingers on the many peaks far up in the air, the diligence clatters into Chiavenna, and, lo, it is night ! The wonderful Splügen Pass has been accomplished in safety.

Chiavenna (the Clavenna of the Romans) is a romantically situated town, thoroughly Italian and very ancient. It is entirely surrounded by rocky mountains that have been fretted by time and weather into extraordinarily grotesque shapes. There are vines everywhere. They climb almost to the very top of the precipitous cliffs, and the sides of the hills are tunnelled with wine caverns. The following day I took the diligence to Colico, and there got the steamer on Lake Como for Como, a five hours' journey.

The weather, which had been fine and bright in the early part of the morning, had now changed, the wind was piercingly cold, and weird black shadows lay on the water and over the mountains, which were streaked with splashes of snow. In spite of the gloom, however, some of the views were very grand, though of course they would bear no comparison with what they are under the summer aspect. The torquoise sky was wanting, and all that wonderful colour and softness which makes Italy so beautiful. From Como I travelled by train to Milan, a distance of thirty miles. Milan was gay with the carnival, and *Aida*, at La Scala, was drawing crowded houses. From Milan on to Verona and Venice, where I found the Laguna frozen over, though the sky was blue and the sun shining brilliantly.

I had the opportunity of inspecting the front of St. Mark's in company with an Italian architect, and I came to the conclusion that the danger of a probable collapse of the whole front of the building has by no means been exaggerated. It has been found absolutely necessary in one or two instances to insert new marble pillars in order to support portions of the façade.

What a wonderful city of dead glory is Venice! What a fascination there is in wandering about its narrow streets, in being rowed over its canals, in lingering in its old palaces! As one roams through that monument of crime and genius, the Doge's palace, how the ghosts that haunt it cling to him, and wail in his ears! The very stones seem to sigh, and the awful dungeons to groan; while the gurgling water of the canal, as it laps the slimy wall outside, might be chanting a dirge, the refrain of which is crime--crime, secret, bloody, cruel.

From Venice I took my way to the curious old city of

Bologna, erstwhile the seat of Italian nobility, but now only bearing the stamp of a greatness that is passed. A long night journey from Bologna to Genoa brought me into a blaze of golden sunlight. Genoa was absolutely sweltering in the sun. The sea was sleeping, and people were laving in its dreamy waters, while bees and butterflies were roaming about in scores. From Genoa I wended my steps back to Milan, and thence to Arona on Lake Maggiore, which I had the advantage of beholding in the brightest of weather. I saw the sun set, and the perfectly calm bosom of the lake flushed with golden glory, that was deepened here and there into emerald shadow by the surrounding hills, which were enfolded in a soft, velvety, purple haze. Overhead the sky was flecked with a few fleecy crimson clouds, and there was a serenity and peace about the scene that was like a spell, this effect being intensified by the faint dreamy sounds of vesper-bells. Winter time though it was, and though the trees were bare of foliage, the whole scene was one of impressive beauty not likely to be soon forgotten.

At twelve o'clock at night I left Arona, in a lumbering old diligence, for Domo d'Ossola, *en route* for the Simplon, my destination being Brigue, in the Rhone Valley. For many miles the road skirts the lake, which was lying like a huge mirror jewelled with stars. Swiss and Italian diligences are about the most uncomfortable vehicles to travel in that can be imagined. The object of their inventor would seem to have been to put on four wheels the maximum of bulk with the minimum of space for travellers. They are reeking, ill-smelling rattle-traps, at once a shame and a disgrace to any civilised nation.

Domo d'Ossola was reached at six o'clock in the morning, and by that time I was nearly frozen to death. I managed

to worm myself out of the box in which I had been packed; and while the horses were being changed, I stamped and chafed my limbs into warmth again. Two or three sleepy Italians were hanging about, and they looked at me, as I imagined, half pityingly, half contemptuously, as though they were thinking, "Ah, only a mad Englishman would dream of crossing the Alps in such weather."

When the horses had been changed the journey was resumed. The day was just breaking, and all around great mountains seemed to suddenly rise up out of the darkness. By and by distant peaks flushed crimson as the sun got higher, and soon the beauty of a golden day chased away the sombre shadows of the night. As the road here forms a steep ascent, I elected to walk so that I might enjoy the wonders of the scenery, which, at the commencement, is not unlike the Italian end of the Splügen. Soon the way narrows to a gloomy gorge that is wild and weird. At a height of 1286 feet the first gallery is threaded, and this part of the road is well calculated to inspire one with awe. The gorge is so narrow, the mountains so high and black, the moaning of the river below in the ravine so dismal; and then the absence of the sun, which, although it smites the upper peaks into quivering fire, does not penetrate down here—all these things beget in one an impression that he is in a dream, and wandering through a scene such as Dante or Wirtz only could have imagined. Steep after steep is climbed by the labouring horses, and still the gorge continues. Presently a granite column is passed which marks the frontier, and once more we are in Switzerland, the land of grandeur. Soon a wretched hamlet called Gondo comes in sight, and here a tall square tower stands. It was erected long ago by the Stockalper family as a refuge for travellers, whom business led across this marvellous but

dangerous pass. A little further on is the gallery of Gondo. This is a tunnel 250 yards in length. It is pierced through a huge block of rock which fills up the gorge. On the face of the rock is this inscription :—

“Aere Italo, 1805, Nap. Imp.”

Of course every one knows that the great Napoleon was the first to conceive the idea of a road over the mighty Simplon. He was ambitious of having a great military way into Italy, and he frequently asked his engineers, “*Quand le canon pourra-t-il donc passer au Simplon ?*” The work was commenced on the Italian side in 1800, and the following year on the Swiss side. It took six years to complete, at the sacrifice of many lives, and at a cost of nineteen million francs, half of which France found, and the other half came from the “Cisalpine Republic.” It was, in reality, the first great engineered route across the Alps.

After leaving the Gondo tunnel a refuge is passed, and then comes another gallery, which in 1814 was fortified on the Italian side. Soon after passing this gallery, the road describes a wide curve, and enters the Laquinthal, through which flows the Laquinbach, which has its source in the Laquinbach glacier. There is a very steep ascent here, and the mountains are truly grand. At twelve o'clock the village of Simplon is gained, 4856 feet above the sea. There is an *auberge* in the village, established as a post and house of accommodation for travellers. It is a wretched hovel. I would advise those who may come after me not to do as I did, namely, attempt to eat the dinner provided at this place. I attempted it, and struggled boldly with the nameless messes, but had to give in at last. I could brave the dangers of the pass, but not the horrors of that

feed. For my attempt I was mulet in three and a half francs. The mess would have been dear at one.

Up to this point the snow had been so light on the road that the wheeled vehicle was enabled to come up to Simplon, a thing that rarely happens in the winter ; but a quarter of a mile beyond the hamlet we changed into an open sledge, which is not only pleasanter but safer in these mountain passes. Up and up we go, and soon a magnificent glacier, the Rossboden, with its moraine, comes in view. It is full of deep crevasses, and is moving down into the ravine. A mile further, and we open out a still more imposing glacier, the Raut. It is overtopped by a splendid mountain, the Rauthorn, 10,463 feet. The only vegetation that flourishes in this sterile region of perpetual snow is the hardy Alpine rose. In a few minutes more we arrive at the hospice. This is a solid stone building, standing in a wilderness of snow and ice. It was begun by Napoleon, but not finished ; and in 1835 it was purchased and completed by the St. Bernard monastery, and is now inhabited by a contingent of the Benedictine monks. There are several St. Bernard dogs here. One is a magnificent brute, as large as a lion. He has been the means of saving numerous lives. In snowy weather, the dogs, with a flask of brandy attached to their collars, and a rug strapped round their bodies, go out with the monks to trace the road in the snow, and give assistance if required. The animals are marvellously trained, and seem to have the capacity to do everything but speak. The hospice is build at the base of the stupendous Monte Leone, 11,696 feet. Its peak, below which is a great glacier, rises sheer up in smooth perpendicular walls. On leaving the hospice the road continues to ascend for about a mile, when the culminating point of the Simplon, 6594 feet, is attained. The most dangerous part of the road is

between this and the fifth refuge. Within a distance of three miles there are no fewer than six houses of refuge, exclusive of the hospice ; and several galleries of extraordinary strength have been built to protect the road. One of these is absolutely carried under a glacier, the ice of which hangs over the masonry. This glacier is called the Kaltwasser, and gives birth to a waterfall, which leaps down an amazing ravine, and its thunder rings in the traveller's ears as he passes through the gallery. Both the French and Valaisians have, in times past, repeatedly fortified this part of the pass ; but the works have always been destroyed by avalanches, which, sweeping down like whirlwinds, and with a roar that is appalling, carrying blight and destruction to everything that stands in their way. All man's daring and skill have never been able to arrest these terrific forces of Nature ; and even the mighty galleries he rears to protect himself and the road are sometimes crumpled up like match-boxes. The day I passed, the snow was in a dangerous condition, and my driver told me there would be an avalanche soon. A few years ago, eight sledges, with their passengers, drivers, and horses, were buried not far from this spot.

To do anything like justice to the view which this part of the pass commands is nearly a hopeless task. One feels the poverty of the pen as he attempts it. No description, however exact or elaborated, could give a just idea of the reality when seen on a bright clear day. From an elevation of 6500 feet, the eye wanders over an area embracing many hundreds of square miles. Below you is a wide and extensive ravine, clothed in its lower depths with luxuriant pine forests. From where you stand terrific precipices plunge down for 2000 feet. The road is very narrow, and has not the slightest protection on the precipice side ; for anything

that impeded the rush of the snow as it sweeps down the mountains would ensure the destruction of the road. One is appalled as he contemplates what the result would be of a restive horse or careless driving. A poor road-mender fell over hereabouts some time ago, and so literally was he dashed to pieces that only a few portions of his body were recovered.

On the left, the Alps of the Bernese Oberland stretch in one unbroken chain of snowy peaks, including the magnificent Jungfrau; jagged ridges, great glaciers, tremendous precipices meet one at every turn. It is a scene in which the smallest detail is on a scale of almost incomprehensible magnitude. The mighty Aletsch glacier is seen to perfection; while before you, and far, far below, stretches the Rhone Valley, with its pine forests and villages, forming the most perfect picture of a landscape, in which giant mountains covered with eternal snow are the main features, to be found in the whole world. You positively feel dumb and helpless, as it were, in the presence of such sublimity. As I saw this picture, it was, indeed, beautiful. Nay, beauty is a mean word to apply to such a scene, which was one of ravishing grandeur—a scene of bewildering enchantment called into being by the mighty magician, Nature. The sun was declining; and the great peaks crushed, shivered, splintered, sharp, seemed surrounded with a network of delicate lines and modellings of light and passing shadows. Sometimes a gauzy veil appeared to drop down over some massive pinnacle; then it slowly dissolved away, leaving the peak flushed with red gold, caught from the sinking sun. Colour and force, height and depth, beauty of outline and grace of curve, softness and tone, every gradation of light and shade, splendour and brilliancy, majesty and might, were all here to make this one of the most imposing

and sublime panoramas the eye could possibly behold. One felt strangely impressed with a sense of unrealisable immensity. The mind grew confused in trying to grasp all the features of the picture. Admiration grew into wonder, and wonder into awe—the awe of fascination. Above the road stupendous masses of ice and snow seemed poised ready to thunder down, and the driver ceased to crack his whip lest the vibrations should disturb the impending heaps, and bring them upon us with a whirlwind of destruction.

From this point the road descends in long windings. There are over 5000 feet to go down before Brigue is reached, at the head of the Rhone Valley. Many galleries are required, and they are all built on the extreme verge of dizzy precipices. The wonder is, how they were constructed in such positions. I understand that their construction cost many lives.

At Berisal, the last post hamlet before Brigue, the open sledge was changed for a wheeled diligence, and then we tore down the serpentine road at a marvellous speed, the four horses being managed with a skill calculated to arouse the envy of the best of City whips. At one point, however, we came within an ace of a catastrophe. At a very steep part, and at a dangerous curve in the road, water had flowed and frozen into a huge sheet of solid ice. As we tore down here the wheels lost their grip on the ice, and the lumbering vehicle slid sideways towards the edge of the precipice. I was jammed up in the *coupé*, which was little larger than a good-sized handbox. I saw the peril, but to have jumped out, as one might do from an open sleigh, was an absolute impossibility. Two travelling pedlars, Italians, who had been picked up on the way, were in the body of the diligence, and they uttered a cry of despair and made a frantic effort to get out. The driver

recognised the danger instantly, and, with wonderful presence of mind, he lashed the leaders into a gallop, keeping them well towards the mountain side of the road. As the ponderous vehicle swung round, it was poised for a moment on two wheels, and the hind part hung over the precipice. As soon as we were dragged into safety, the horses, which had become frightened and restive, were stopped. The Italian pedlars sprang out; they were as pale as death, and I saw them both cross themselves devoutly. I walked back, and stood on the edge of the precipice. There was a clear fall of about 300 feet on to needlerocks. As I gazed into the profound depths, I felt that we had escaped utter annihilation by the skin of our teeth only, and the line from Euripides instantly occurred to me—

“How pleasant is it for him who is saved to remember his danger!”

Having got the horses calmed, we proceeded at a less rapid rate, though all peril had not quite passed, as in many parts the road was little better than a glacier, and the exercise of great care was required in driving over the ice.

The sun had set now. The great distances had faded into violet shadow; but on the mighty peaks the Alpenglühen lingered, and so wonderfully beautiful was the effect that it almost seemed unearthly. It was as if the snow-clad mountains had become transparent, and through the medium of this transparency shone a glowing rose-coloured light. Very gradually this glory dissolved away, and purple gloom stole up and up, enfolding height after height, until at last the scene was hidden away, and the only salient points were the aiguille-like outlines of the mountains as seen against the star-studded sky.

Very soon we rattled down the steep, narrow street of Brigue, and the crossing of the Simplon was a *fait accompli*.

It had been a long journey, and I had had no sleep for thirty hours, so that I was glad of the accommodation which the only inn then opened in Brigue offered.

On the following day I continued my journey down the superb Rhone Valley, which I had the opportunity of seeing under the most favourable atmospheric conditions. The sky was cloudless, the sun brilliant; but as the Lake of Geneva was neared, we passed from golden light to clinging mist, that thickened to a dense fog. For more than thirty days Geneva had been enveloped in this fog, and not even a glimpse of the sun had been seen. I was two days in the town, and never once saw the lake; and so I was glad to get away, and went on to Berne, one of the oldest and most picturesque of Swiss towns. But here the weather was bad also; and so I turned my steps homewards, after a delightful, if rapid, journey that had taken eighteen days to accomplish, and during which I had travelled nearly all round Switzerland, through a large part of Italy, and crossed the Alps twice by two of the most wonderful and beautiful of the Alpine passes; and this in mid-winter, when it is generally supposed that there is nothing to be seen, nothing to interest. I can only say that the beauty of the Alps, as I saw them, white with the winter snows, and glittering in the winter sun, will ever linger with me as a memory and a dream.



ALPINE CLIMBING IN THE WINTER.

(By the Editor.)

EVERYONE is supposed to know something about Switzerland in the summer ; but Switzerland in the winter is known to comparatively few. Happening to be in Davos-Platz at Christmas time in company with a member of the English Alpine Club, we decided on making a mountain excursion, as the weather was exceptionally fine. Davos-Platz being in Eastern Switzerland, the mighty giants of the Alps are far away, but there are many peaks in the neighbourhood of this charming valley which are worthy the not too ambitious climber's attention. Amongst these is the Schwarzhorn, 10,338 feet, and bearing a glacier on its massive sides.* It is a solitary peak, the highest in the range, and stands out in lonely majesty between the Flüela Pass, one of the principal routes to the Lower Engadine, and the Dischma Thal, a narrow lateral valley running from Davos. My friend and I discussed the practicability of sitting on the head of this lofty peak, and so applied to Mettier, a renowned chamois hunter, to be our guide. He is a short, powerfully-built man, with a bronzed, iron, deeply-furrowed face, and a pair of wonderfully keen and deeply set eyes (Mettier has since been gathered to his fathers). The 27th of December was fixed for the excursion, and it was arranged that we were to rise at four, have some breakfast before starting, and then drive by sledge up the Flüela Pass to the "Hospice," close to where the ascent commences, and which is ten miles away from Davos.

We completed our arrangements the night previous. The sleigh was ordered, Mettier was to be at the hotel at five A.M. sharp ; the head waiter was instructed to have a

*A well-made path has since been constructed to the summit of this splendid mountain, and in the summer it is practicable for mules. The winter conditions, however, are still the same as described in the article.

cold fowl, a bottle of brandy, and the necessary adjuncts of cheese and bread ready packed over night, while the cook was to rise early and prepare coffee.

We retired to bed at ten o'clock. I slept soundly, and when the porter thundered at my door I could not realise that the hour for rising had arrived. I confess that at that moment the warm blankets had an unusual attraction. I made a supreme effort, however, and sprang from bed. By the dim light of a candle I performed my ablutions, having to break the ice in my jug to get the water. Then I wriggled into stiff, heavily-nailed, well-greased Alpine boots, adjusted snow-gaiters, and thus equipped, went into the cold, dismal-looking dining-room, where a sickly lamp made everything appear as cheerless as it is possible to imagine. In a few minutes I was joined by my friend, who, like myself, was attired in the orthodox Alpine costume. The sleepy waiter shuffled about, seeming to utter a complaint with his feet at being compelled to leave his bed at such an untimely hour. Having discussed our coffee, my friend and I lit our pipes and went on to the verandah. Oh, how intensely cold it was! Our very marrow seemed chilled, as well as it might be, for the thermometer marked 17 degrees below zero, or forty-nine degrees of frost (Fah.) But oh, the glory of the night! The great stars shone with a brilliancy never experienced in foggy Britain. A strange, almost unearthly silence reigned in the valley. The white mountains looked weird and mystic in the ghostly light. Over one peak Venus was just rising with a lustre and a glory that cannot be imagined. One of her points seemed to rest upon the crest of the mountain and shed a halo round it.

Faithful to his appointment, the old guide arrived. Standing there in the cold, weird light of the stars he was

a study for a painter, as, alpenstock in hand, and the usual cow-hide bag—which was to hold our provisions—strapped across his broad shoulders, he saluted us with, “*Guten Morgen, meine Herren; wie geht es Ihnen? Es ist sehr kalt.*” We admitted that it *was* cold, and we gave emphasis to our admission by rubbing our hands and stamping our feet to keep up the circulation. In another few minutes the jingling of sleigh bells announced the approach of our conveyance, and we had soon packed away behind the sleigh our alpenstocks and ice axe, enveloped ourselves in furs and rugs, and were gliding over the hard snow on our ten miles’ drive through the wonderful Flüela Pass. For the first few miles only the jingle of the bells and the ring of the horse’s hoofs broke the stillness. It was too cold to talk. One’s very breath seemed to freeze. Soon, however, the stars paled, and a strong green light seemed to diffuse itself through the Pass; then the green changed to a faint, roseate flush that tinged the snow, and presently—imperceptibly—a golden glow spread over the mountains; we saw the long rays of the rising sun shoot up into the blue heavens, and lo! it was day. Then our blood thawed, speech came to us, we chatted and laughed, and the old guide predicted magnificent weather.

We toiled up the steep Pass, and at every turn new beauties opened out, until the lonely Hospice in that vast wilderness of snow and ice was reached at a quarter to nine. We sprang joyfully from the sleigh, glad once more to be on our feet; and looking up in the clear air, with the sun smiting it into a quivering mass of gleaming gold, we saw the towering rocky spire of the Schwarzhorn, which we had come to conquer. It stood out far above its surrounding satellites—a monarch among those mountains. At the Hospice we breakfasted, and then at 9.25 we started

on our journey with the "*Bon Voyage*" of mine host ringing in our ears. .

How grand was the scene as the snow-elad, sun-flushed mountains rose up on all sides, while overhead was the brilliant, perfectly cloudless, turquoise dome. It was evident we were going to have a scorching and beautiful day.

The silence of the wilderness was unbroken, the air was absolutely still. We proceeded down the Pass in the direction of the Engadine for half a mile, then branched off, and commenced to ascend—a great mass of precipitous rock being our first goal. The snow was very soft and deep, and we sunk sometimes above the knees. It was hard and trying work, but we went merrily on. The guide being some yards in advance, and consequently higher than we, seemed surrounded by a brilliant and dazzling halo as the glittering sunlight played about him. This effect was very striking. At length we reached the rocks, and then paused to get our breath and admire the beautiful prospect. We could not see *our* peak, as the projecting spurs hid it from sight.

The way became more steep and difficult now. We got on to a long and declivitous snow slope that was partly frozen, and necessitated some little care, as it terminated in a precipice. We saw some ptarmigan, the only living things besides ourselves in the weird solitude, where the dazzling virgin snow was almost blinding in its whiteness. We crossed the slope at an oblique angle which always trended upwards. Then we got on to the glacier, which was very steep, and the snow lay thickly upon it. We went straight up this, great masses of snow, disturbed by our feet, going tearing down into the unknown depths. The sun was extremely powerful, and the perspiration dripped from us. We conquered the glacier and crossed a

level snowfield. More laborious work ; going straight up, until at last we gained some flat, rocky ground. The limestone rocks, exposed as they were to the full force of wind and sun, were bare of snow, and here we called a halt. We were soaked with perspiration, and our faces were scorched with the sun and glare from the snow to the hue of boiled lobsters. Seating ourselves on the rocks, the bag was unpacked, the brandy produced, pipes filled, and then we looked around. We were on the crest of a ridge between our mountain and another lesser peak. On one side we looked down into the Flüela Pass, and on the other into the Dischma Thal, which is terminated by the mighty mass of the Scaletta Glacier, one of the finest in this part of Switzerland. In many places the ice was perfectly bare of snow, and we could see down into the yawning crevasses. Upwards, but far off yet, majestic and solitary in the golden light, was the black, riven peak of the Schwarzhorn. From where we sat the *arete* commenced, and we knew that our real work yet lay before us. "Gentlemen, we must start," said our guide decisively when ten minutes had slipped away. So the bag was repacked, the ashes knocked from our pipes, and we were once more on the move. We got on the *arete*. On the right the treacherous snow slopes shelved at an angle of about 75 degrees. On the left were dizzy precipices—literally vertical walls of rock, a thousand feet or more in depth. We went steadily up until a narrow ledge of riven rocks was reached. We overcame this difficulty, and then before us, going straight up, was the thin edge of the *arete* that led to the ultimate peak. Half-an hour of this toil, and then the guide grasped my hand and exclaimed—

"Hurrah ! *Wir haben es gethan !*"

We had triumphed, and stood on the head of the Schwarz-

horn—conquerers ! The crest is flat, but there is not much room up there. On three sides the shattered, splintered rocks go down sheer for 2000 feet. On the fourth side was the *arete* up which we had come, and a precipitous *couloir* sloping down for 1000 feet to the glacier.*

Gazing around, we beheld a panorama which is admitted to be one of the finest in the whole of Switzerland. The day was perfect even for this superb climate. Not a suspicion of a cloud, not the faintest sign of mist, was anywhere visible, turn which way we would. I was dumb, entranced, amazed. A speck, an atom I felt myself to be, and yet with a soul panting to cry out in ecstasy of unutterable joy—of praise to the God of Nature who had created this wonderful scene. Range upon range, peak upon peak of snod-clad mountains stretched away to the glittering horizon. To the north the Bernese Oberland, to the east the great mass of Rhæticon, the south the Tyrol and the Engadine, all giants, golden and dreamy in the burning light ; but mightier than they was the great Jura Range in the west. To the left we count the four peaks of Monte Rosa, still more to the left the white dome of the Jungfrau glittered ; then we made out the Weisshorn, the Balmhorn, and a suggestion of the grim monster—the Matterhorn. Nearer to us was the great Ortler Spiz, the Tinzenhorn, Piz d'Alea, Piz Miel, and the perpendicular walls of the Hoch Ducean. It was an inconceivably magnificent picture seen through a medium of the clearest atmosphere, and glittering in the most gorgeous golden light of a brilliant sun. To me it is purifying a memory—a dream of entrancing splendour that will last as long as life.

*I believe it was the first time the mountain had ever been ascended in the winter.—*Editor*.

When we had gazed in silent rapture, and taken our bearings by compass, had picked out and named dozens of peaks, we seated ourselves, and proceeded to discuss our luncheon, for our work and the keen atmosphere on that airy height of nearly 11,000 feet had sharpened our appetites. From the Hospice to the summit occupied us exactly three hours and forty minutes. Luncheon over, we again filled our pipes, and stretching ourselves on the hot rocks, we dreamed away nearly three-quarters of an hour. The fierce rays of the sun beat down scorchingly upon us, but we smoked and dreamed in spite of the heat. I studied every detail of the picture, took in every minute particular, burned it all into my brain as it were, so that I might never forget it. At ten minutes past two the guide said we must leave, for the sun was declining in the west, but I begged for a little while longer, which was granted. At the end of the time I would have still further prolonged the stay, for it was hard to tear oneself away from such a scene; but our guide was peremptory and decisive. The slanting shadows of the mountains told that the winter sun was getting low, and there was just a suspicion of chilliness in the air. In Switzerland in the winter the sudden change in the temperature as soon as the sun goes down is generally extremely great, and if your clothes are at all wet, they freeze to iron within five minutes. All being ready, we started on our descent. Down the snowy *arete*, over the rocky passage, across the glaciers we went rapidly and safely to the lower slopes. Then we stopped to breathe. It was getting very cold, but the dying sun was steeping the snow in fiery red. On again, traversing our tracks of the morning; and as the gold, and amethyst, and crimson glory of the dying day trembled on the mountain tops, we stood once more at the Hospice door. We changed our boots and stockings in the

hostelry, had some boiled eggs and a huge bowl of hot spiced veltlina, and by that time our sledge was ready. The Flüela Pass is not considered particularly safe even in the daytime ; its dangers are enhanced at night. Swathed in our wraps, and lighting our cigars, we gave the order to start. The road was in very bad condition. The snow was worn into deep ruts by the heavy wine sleighs that come over from the Engadine, and we were soon made aware that our ten mile ride was not to be entirely free from peril, for we had not proceeded far when the sleigh got off the narrow track and literally hung over a precipice, but the driver dexterously jerked the horse round in the opposite direction, and so prevented what might have been an unpleasant mishap. On again, when suddenly one of the runners sank into a rut, over went the sleigh, my friend was shot over my head, I was under the sleigh, and the driver and the guide were pitched into a bank of snow. Fortunately the spot was level and the snow soft, and so we were none the worse for our spill. Half-a-mile further on precisely the same thing happened again, but with no more serious result. The stars were shining brilliantly, and the moon, which was full that night, was rising in regal magnificence. From the burning glory of the day we had passed to the silver glory of the night. The glowing colours called into being by the kingly sun were succeeded by the cold, glittering, argent splendour of the queenly moon. The snow sparkled in millions of flashing jewels as we glided along. There were stars above and stars below. The effect was wonderful and entrancing. It was extremely cold, but being well protected with wraps we did not suffer much. The gorgeous magnificence of the night—which was almost unearthly in its witchery and beauty—was too fascinating for us to think of our personal comfort. Without further mishap, though

with one or two wonderfully narrow escapes, we reached the hotel in time for *table d'hôte*, where we were warmly welcomed by our friends. We felt richer by the undying memory of a joyous day that had placed us face to face with Nature in her most entrancing grandeur ; and possibly some slight degree of pardonable pride at the thought that we had conquered an Alpine monarch in spite of his grim barriers of winter, ice, and snow.



DAVOS-PLATZ IN SUMMER.

SO far we have confined ourselves to dealing with Davos-Platz as a winter resort, but our readers must not imagine that it is only suitable for a winter residence.

In point of fact, the season lasts throughout the year, and as regards invalids, many cases do better in the summer months than in the winter. The climate of Davos-Platz is strengthening and recuperative at all seasons of the year, and however warm the rays of the sun may be in the summer months, the air in the shade is always cool and refreshing. The vicinity of the pine-forests, and their health-giving aroma, should not be forgotten when looking upon Davos-Platz as a health-resort for summer; while the other natural advantages—air, water, geological formation of the valley and its favourable exposure (of which we have already treated in detail in these pages)—act as potently in summer as in winter. We are glad to observe that medical men are beginning to see the advantages that accrue to their patients who take up their residence in Davos-Platz in the warmer season, as they acclimatize much more rapidly than if sent in the autumn or commencement of winter, and have, when the cold sets in, gained such vigour and strength as to enable them to take full advantage of the winter, instead of losing weeks, perhaps months, in accustoming their constitutions to climatic conditions hitherto unfamiliar to them. There is no doubt that much harm is often done by patients remaining in England till the last moment, and then starting off on a long and wearying journey during cold and unsettled weather. Our own experience of the summer climate of Davos-Platz is that it is most genial and invigor-

ating, and we have no hesitation therefore in saying that patients who intend to winter in the valley should be there long before the winter sets in.

Looked upon from the tourist's point of view, it is at once not only a perfectly delightful place of sojourn, but it is a centre for an immense number of magnificent excursions. In its summer dress the valley is perfectly exquisite, while the natural resources in the way of botany, entomology, geology, &c., far surpass those of many other Alpine resorts. Boating can be had on the lake, and rights to fish in the lake, as well as in the river, can also be obtained. To give a complete list of the excursions would fill a volume of themselves. We select a few of the excursions which we consider to be the most interesting; and for more detailed information we refer the reader to the "J. E. M." Guide to Switzerland, price four and sixpence. (Same publishers.)

EXCURSIONS FROM DAVOS-PLATZ.

TO THE DAVOSER SEE (lake). Time, 1 hour. Beautiful situation. The lake contains plenty of fish, but they are difficult to catch, owing to the clearness of the water.

TO THE GEMSJÄGER. Time 1 hour. An interesting walk.

TO CLAVADEL. 3 miles. There are some springs here, much resorted to in summer. A new carriage-road was constructed two years ago, which, crossing the valley, winds up through the pine-forest. This excursion has become a very favourite one.

TO THE GRIALETSCH GLACIER (little known) AND BACK BY THE FLÜELA PASS. For good pedestrians only. The way is to the top of DISCHMA THAL (10 miles); can drive thus far. Thence bear to the left over broken rocks, towards the mouth of a ravine—cannot be mistaken. A splendid view of the

SCALETТА GLACIER. This ravine must be traversed to its head, where there is a lonely tarn shut in by mountains and riven peaks. We now bear to the right, and soon see the glacier far below us, and rising above it is the PIZ VADRED. The ice-fall is round and smooth, and not broken into *séracs*, as is usually the case. We descend towards the glacier, and make our way to the left, through the weird and desolate GRIALETSCHE THAL, which is swept by tremendous avalanches in the spring. $2\frac{1}{2}$ hours' walking over a very rough way are required to gain the Flüela Pass. Thence to the left to Davos, all down hill. This excursion is a most interesting one, but requires at least 12 hours; provisions should be taken.

ASCENTS FROM DAVOS.

THE SCHIAHORN (8930). Time, 5 hours. Guide not necessary, as a good path has been laid out to the summit of the mountain by the Davos branch of the S.A.C. Beautiful view. The path begins behind the *Hotel Belvedere*.

THE KUPENFLUH (8637). More difficult than the Schiahorn, and view not so fine. Route for part of the way the same as for the Schiahorn.

THE SCHWARZHORN (10,400). Drive 10 miles to the Hospice in Flüela Pass (*see* article, "Mountain Climbing in Winter.") The ascent commences a quarter of a mile down the other side of the Pass. Time from the Hospice up and down, 5 to 6 hours. An excellent path has been made to the top of this mountain, also by the Davos branch of the S.A.C. A small glacier has to be crossed, and a narrow *arête* traversed. The view from the summit is entrancing, and embraces an enormous area; the panorama will bear comparison with any in the Alps, and yet the mountain is comparatively little known. Descent can be made into the

Dischma Thal, but it requires care, as there is no path. The slopes are exceedingly steep.

THE HOCH DUCAN, from *Sertig Dörfli*, at top of the Sertig Thal. Can drive to this point (7 miles). Time, 7 hours. Guide imperative (good rope required). This is a splendid excursion, but involves a great deal of difficult rock work, that must not be attempted by novices. The view, while being very fine, will not bear comparison with the Schwarzhorn.

THE PISCHA (9800), from *Alpenglocke* in the Flüela. Time 6 to 7 hours. Guide necessary ; 10 francs.

CROSS ROUTES FROM DAVOS.

BY THE SCALETTA PASS (8604) to the Engadine, which you reach at Seans, thence on foot or per diligence to the Upper- or Lower-Engadine. The route is to top of Dischma Thal (already described), then by the path bearing to the right of the Scaletta Glacier, which closes in the valley. There is a hut at the summit of the Pass, and some chalets on the other side. The Scaletta Pass was the route of communication for centuries between the valleys of Davos and Engadine until the modern diligence road was constructed over the Flüela. The path then got into considerable disrepair, but has lately been levelled and improved by the Davos branch of the S.A.C., so that it is now in better condition than it ever was before, and is frequently crossed by travellers, who cannot sufficiently praise the grandeur of the scenery.

TO BERGÜN BY SERTIG PASS (8500). Time 8 to 9 hours. Guide not necessary. Route to top of Sertig Thal, same as for Hoch Ducan, thence bear to the right through the narrow gorge commencing under the precipices of the Hoch Ducan. The views *en route* embrace the PORCHABELLA

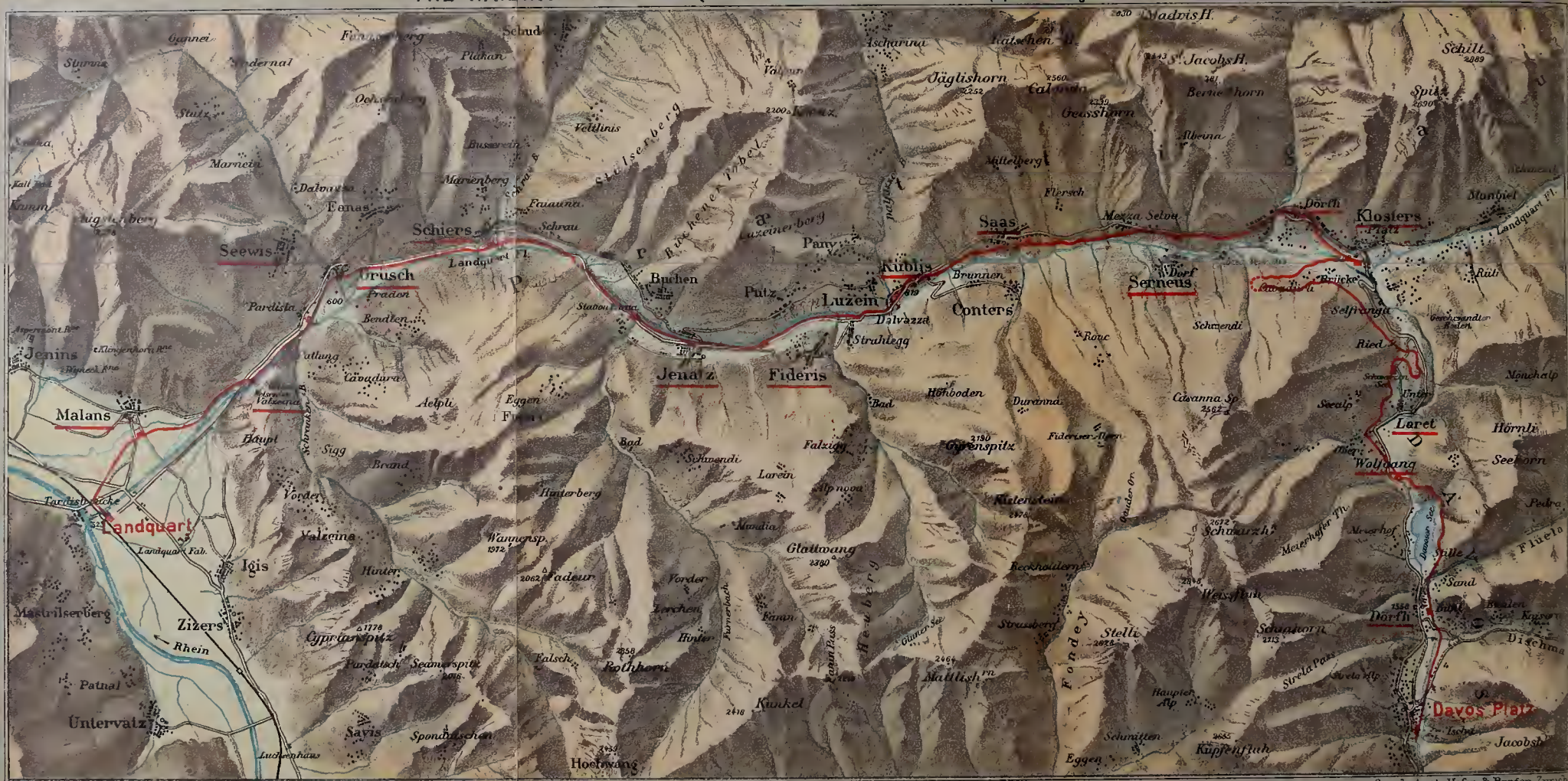
GLACIER and PIZ KESCH (11,259), which lie to the south. We also pass the RAVEISCHIG LAKES, and the village of CHIACLAVUOT, thence through the VAL TUORS to Bergün. Altogether this is a delightful excursion. Provisions should be taken.

To SÜS (in the Engadine) by FLÜELA PASS (7900). Diligence daily from Davos, in 5 hours. It can be walked in 7 hours. The Flüela, while not equal to many of the great passes, is nevertheless exceedingly grand. The route commences at Davos Dörfli, and winds up through pine forests to the *Hospice*, the surroundings of which bear some resemblance to the Grimsel. The great Schwarzhorn towers up on the south side, and the WEISSHORN (10,200) on the north side. The Pass is a water-shed between the Danube and the Rhine. There are two small lakes. The outflow of one sends its waters in both directions to the Engadine as well as to Davos. The *green* one on the left is called the SCHOTTENSEE; that on the right, the *black* one, does not seem to have any name. The Hospice here is a post inn. From this point to Süs is all descent, the views being very fine.





THE RAILWAY FROM LANDQUART TO DAVOS-PLATZ (opened July 1st 1890)



DAVOS-PLATZ TO LANDQUART BY THE PRÄTTIGAU.

THE train starting from DAVOS-PLATZ passes—
DAVOS-DERFLI. Hotels: *Kurhaus* (good and comfortable), *Hôtel Flüela*, and skirts the Davoser See at the foot of the Seehorn, and rises to WOLFGANG (5438), the culminating point of the Davos Valley, from whence it descends rapidly by long windings to—

KLOSTERS (3950). Hotels: *Silretta*, *Brosi*, *Vereina*, *Florin*. This is a magnificently-situated village, and an excellent centre in the summer for excursions and ascents, which are described in order. (These excursions can, of course, be made nearly as easily from Davos-Platz.)

ASCENTS.

CASANNA-SPITZE (8400). Time, $5\frac{1}{2}$ hours. Guide desirable. Fee, 8 francs.

CANARDHORN (8579). Time, $6\frac{1}{2}$ hours. Guide, 9 francs. Both these mountains are easy, and afford splendid views.

THE UNGEHEUERHORN (9870). Time, 7 to 8 hours. Fee for guide, 12 francs.

THE PLATTENHÖRNER (10,590). Time, 8 hours. Guide, 12 francs.

The two last-named are fatiguing, but not particularly difficult. Splendid points of view.

THE SILVRETTAHORN (10,700). Time, 8 to 9 hours. Guide, 12 francs. No particular difficulty. Magnificent view.

CROSS ROUTES FROM KLOSTERS.

TO LOWER ENGADINE BY VEREINA PASS. Time to Süs,

10 hours. Guide necessary, 12 francs. This is a very attractive excursion, and presents no difficulties.

TO THE ENGADINE BY VERNELA PASS (9200). Time, 12 hours. Guide necessary. Fee, 14 francs (rope and axe needed). This is more difficult than the last-named, but is highly interesting. *En route* we pass the cavern called BARETTO BALMA (6500), which is situated under the PILLER GLACIER. By this route the traveller arrives at LAVIN.

TO THE ENGADINE (*Guarda*) BY SILVRETTA PASS (9937). Time, 12 to 13 hours. Guide, 18 francs (rope and axe). This is a splendid excursion, the route being over the huge SILVRETTA GLACIER, which is much crevassed, and requires caution. The expedition, however, is not particularly difficult, and is strongly recommended. In descending, the PLAN RAI GLACIER has to be traversed, and here some care must be exercised, as the ice-slopes are very steep.

TO GUARDA BY THE TIATSCHA PASS. Time, 14 hours. Guide, 20 francs. Very difficult; must not be attempted by novices.

BY THE SCHLAPPINA JOCH (7150) TO MONTAFUN. Time, 9 hours. Guide, 10 francs. This is a very fine excursion, and not difficult.

Leaving Klosters we next gain—

MEZZA SELVA. Hotel, *Florin*. One mile from here are the BATHS OF SERNEUS. Water sulphurous, and said to be highly efficacious in skin diseases and rheumatism. The next village is—

KÜBLIS (2700). Hotels: *Steinbock, Krone*.

CROSS ROUTE FROM KÜBLIS.

TO MONTAFUN BY ST. ANTÖNIEN JOCH (7190). Time, 9 hours. Guide, 10 francs. Very fine excursion. At St. Antönien is a village of same name, and from here the

SULZFLUH (9300) may be ascended in 5 hours. It is not particularly difficult with a good guide. View is magnificent.

Continuing our journey from Küblis, we pass through pretty scenery to—

FIDERISER-AU. Two miles from here are the BATHS OF FIDERIS, beautifully situated in a gorge. The waters have a considerable reputation. Next village is JENAZ, then SCHIERS, followed by GRÜSCH, and we arrive at PARDISLA, which is the point whence Seewis is reached. The distance is 3 miles.

SEEWIS.

Kurhaus, and *Pension Scesaplana*. This village occupies a magnificent position, and is much resorted to in spring and summer. It stands on a hill-side, and commands fine views.

ASCENTS FROM SEEWIS.

THE SCESAPLANA (9780). Time, 7 hours. Guide necessary, 10 francs. A splendid excursion and fine view. Not very difficult.

THE AUSTENBERG (sometimes called Vilan) (7820). Time, 4 hours. Guide (not absolutely necessary), 6 francs. Magnificent view.

From Pardisla we can ascend VALZEINER SPITZ (4590), by going to VORDER-VALZEINA, in the VALZEINA, where there is a *Kurhaus*, frequented in the summer.

The PRÄTTIGAU ends here, and through the KLUS, a magnificent gorge with stupendous precipices, we enter the Rhine-valley, and reach Malans, a beautifully situated village in the midst of orchards and vineyards; the Malanser

wine has a great local reputation. The next station is LANDQUART, where we reach the main line.

RAIL ROUTES from Landquart to *Coire, Ragatz, Zürich, Rorschach, Constance.*

COIRE TO DAVOS-PLATZ BY STRELA PASS

(7800).

(*See Map of Davos.*) Diligence as far as LANGWIES daily; time, $4\frac{1}{2}$ hours; fare, 3 f. 75 c. Thence footpath only. Guide not necessary. The summit of the pass (marked by a cross) lies between the SCHIAHORN (8930) on the left, and the KÜPFENFLUH (8632) on the right. Time altogether, about 10 hours.

NOTE.—*This route is not practicable in winter.*

COIRE TO DAVOS BY LENZ AND WIESEN.

35 miles. Diligences daily, in 9 hours; fare, 13 f. 90 c.; coupé, 16 f. 70 c. Carriage, 2 horses, 80 francs.

The road commences by the *Steinbock Hotel*, and rises quickly. Fine views. Passing several small villages, we reach—

CHURWALDEN (*see Map*). Hotels: *Krone, Gengel*; Pension, *Hemmi*. Much resorted to on account of whey cure and the splendid air. Village picturesquely situated. There is an old monastery and a church.

PARPAN (4937). Hotels: *Kurhaus* and *Pension Parpan*. Beautiful situation, and a good place for a stay.

ASCENT FROM PARPAN.

STAETZER HORN (8490). A bridle-path up. Time, 4 hours. Guide not required. Splendid view. Descent can be made to Thusis in $4\frac{1}{2}$ hours. Road easily found.

The road still ascends, and reaches its culminating point (5100), and then we skirt some small lakes, and the large LAKE OF VATZ, most romantically situated, and pass through what is known as the LENZER-HEIDE, a most dangerous place during the prevalence of snow storms.

LENZ. Hotel, *Post* (very fair). We next pass BRIENTZ, DORF ALVENEU, SCHMITTEN, and arrive at WIESEN (for continuation of route from Wiesen see following route).

COIRE TO DAVOS BY SCHYNSTRASSE AND TIEFENKASTEN.

(See Map). Diligence once a day ; time, 13 hours. This is by far a grander route than the last-named.

The route is to Thusis, thence, passing the entrance to *Via Mala*, we commence to ascend what is known as the SCHYN ROAD (or Strasse), opened since 1870 ; it runs on the south side of the ALBULA. Views splendid. On the way we cross the SOLIS BRIDGE, which spans a gorge of the Albula. Height above the water, 252 feet. This is a very wild and romantic spot. A stone dropped from the bridge into the water sends up a tremendous roar.

TIEFENKASTEN. Hotels : *Pension Julier* (good), *Albula* (good), *Kreuz*. A magnificently-situated village, at the beginning of the Julier Pass. In summer it presents a scene of constant bustle and activity, as carriages diligences, and pedestrians are constantly passing.

Continuing on our way to Davos, we join the Lenz route below Dorf Alvener, and pursue our way to Wiesen. The Matternhorn-like mountain across the gorge on the right is the TINZENHORN, and the one next to it the PIZ MICHEL, and to the left, above BERGÜN on the Albula Pass the PIZ D'AELE.

WIESEN.

Hotels : *Bellerue, Palmy*. A very small and lonely village, but splendidly situated. The little hamlet immediately opposite on the slope of the mountain is JENISBERG, a strange, out-of-the-world place, whose population, numbering about thirty souls, are as simple as children. We now descend by a sharp curve into the magnificent ZÜGE GORGE, the scenery of which is wild and wonderful. In ten minutes we reach the BÄRENTRITT (the Stép of the Bear) ; stop here, and go on to the little stone platform built over a stupendous gorge, and gaze into the abyss. It is one of the weirdest sights in the Alps.

The road through the Züge, known as the *Landwasser Strasse*, was constructed at an immense cost, the engineering difficulties at times being almost insurmountable. In winter and spring the road is exposed to avalanches, and several galleries are built for protection, and many projecting rocks are pierced with tunnels. Just before leaving the gorge the road has been carried under the rocks. Formerly it skirted them, and was protected by a gallery, but it was swept away so often by avalanches that the tunnel became an absolute necessity.

Leaving the gorge behind, we enter the valley of Davos. We pass HOFFNUNGS AU (a manufactory-like building, erected some forty years ago by a French company to work silver-mines in the mountain above ; the undertaking did not pay), next GLARIS, (a little village on the other side of the stream), then SPINABAD, where there is a small sulphur bath, and at last FRAEUNKIRCH, delightfully situated opposite the SERTIG THAL, two miles from DAVOS-PLATZ.

METEOROLOGICAL OBSERVATIONS.

THE following meteorological observations are for the winter seasons of 1886 to 1889 inclusive, commencing in October and ending in March of each year.

The instruments used are of the best possible description (Negretti, and Zambra, and Casella). They were verified at the Kew Observatory, and placed according to the regulations of the English Meteorological Society.

The greatest accuracy and care were observed in taking the observations, and they may, therefore, be looked upon as perfectly reliable.

N.B.—When wind is *not* mentioned an absolute calm is indicated.

The *force* of the wind unfortunately has not been observed owing to there being no reliable instrument for this purpose in the valley.



APRIL, 1886.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up. Curr.	Val. wind.			
1 25	129.119	5	56	26	54	44	O.	S.	—	—	Cloudless; Mod. breeze from 11 a.m.
2 25	173.117		57	52	56	41	O.	S.	—	—	Cloudless; Mod. breeze from 11 a.m.
3 25	143.121	61	52	28	59	41	O.	S.	—	—	Cloudless.
4 25	955.118	61	29	5	60	42	O.	N.	—	—	Cloudless; Mod. breeze from 10 a.m.
5 24	998.124	5	64	36	60	48	O.	N.	—	—	Cloudless.
6 24	797.127	64	31	5	57	46	S.	S.	0.33	—	Constant sunshine, but sky not cl'dless a.m., rain & St. breeze p.m.
7 24	921.117	5	47	32	43	37	N.	N.	—	—	Snow a.m. cl'ds & sun. till 2 p.m. afterwards cl'dless, mod. bre. a.m.
8 24	818.118	56	27	5	55	44	O.	S.	—	—	Cloudless; Mod. breeze.
9 24	620.117	5	56	34	37	36	S.	S.	0.56	8.75	Sunshine and clouds a.m., misty and snow-showers p.m., high wind.
10 24	486.64	30	524	29	29	32	S.	S.	0.18	1.25	Snow.
11 24	416.139	5	40	22	36	32	S.	S.	—	—	Sunshine and clouds.
12 24	577.123	45	5	13	44	36	S.	S.	—	—	Sunshine and clouds.
13 24	799.120	45	24	41	37	51	S.	N.	0.02	0.25	Slight snow-showers. Mod. breeze.
14 24	837.115	5	44	30	43	38	N.	N.	0.01	—	Sunshine and clouds. Moderate breeze.
15 24	690.100	5	40	28	36	5	S.	N.	0.01	—	Sunshine and clouds. Moderate breeze.
16 24	594.67	5	37	526	35	5	S.	N.	—	—	Cloudless till 9 a.m., then sunshine and clouds. Mod. breeze.
17 24	708.128	52	52	1	45	36	S.	N.	—	—	Almost constant sunshine.
18 24	724.118	52	27	48	37	37	S.	N.	—	—	Almost constant sunshine.
19 24	560.92	51	29	49	49	39	S.	N.	—	—	Cloudy.
20 24	511.100	5	54	27	52	42	S.	N.	—	—	Constant sunshine but sky not cloudless.
21 24	669.96	5	47	30	45	42	N.	N.	0.07	—	Rain till 11 a.m., sun. & cl'ds with slight rain p.m. Mod. breeze.
22 24	807.113	51	5	33	48	43	S.	N.	0.02	—	Cloudy, gleams of sun. and showers of rain and hail. Mod. breeze.
23 24	924.104	50	52	41	49	41	S.W.	N.	—	—	Cloudy, with gleams of sunshine.
24 24	957.124	57	31	53	43	45	N.W.	N.	0.02	—	Sunshine and clouds. Slight shower of rain at 5 p.m.
25 24	946.123	63	29	45	57	45	S.E.	N.	—	—	Constant sunshine, but sky not cloudless. Mod. breeze
26 24	892.127	63	30	56	44	44	O.	N.	—	—	Constant sunshine, but sky not cloudless.
27 24	795.121	5	62	529	58	44	O.	N.	—	—	Cloudless.
28 24	705.123	62	30	58	43	43	S.W.	S.	—	—	Cloudless.
29 24	651.126	5	57	33	56	45	S.	N.	—	—	Cloudless till 9 a.m., then sunshine and clouds. Strong breeze.
30 24	693.107	5	55	534	48	43	S.	N.	0.04	—	Sunshine and clouds, with occasional showers of rain.

MAY, 1886.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in	Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val. wind.				
1 24 70 ⁸ 103 5			52	31 5	50	45 5	S.	N.	0 03	—	—	Sunshine and clouds. Slight showers of rain p.m.
2 24 8 ⁶ 112			45	535 5	44	40	N.	N.	0 03	0 25	—	Cl'dy, occas'nal slight rain a.m., sun. and cl'ds p.m. Mod. breeze.
3 24 930 106			38	23	35	32	N.	N.	—	—	—	Sunshine and clouds, slight snow-showers p.m. Mod. breeze.
4 24 986 109			45	22 5	41	32 5	N.	N.	—	—	—	Almost cloudless. Mod. breeze.
5 25 062 115			51	519	47 5	36 5	O.	N.	—	—	—	Cloudless. Mod. breeze.
6 24 981 107			51	28	40	37	N.	N.	—	—	—	Cloudy, slight snow-showers a.m. Sun. and cl'ds p.m. St. breeze.
7 24 018 115			51	29 5	47 5	33 5	N.	N.	—	—	—	Almost cloudless.
8 24 890 123			57	533	51	40 5	N.	N.	—	—	—	Constant sunshine, but sky not cloudless.
9 24 899 124			63	28	61	47	N.W.	N.	0 11	—	—	Constant sunshine, but sky not cloudless.
10 24 762 125			64	31	58	44 5	S.W.	S.	0 13	—	—	Cloudless a.m. Sunshine and clouds p.m.
11 24 715 77 5			51	40	46	43	N.W.	S.	0 13	—	—	Cloudy, with gleams of sunshine and slight showers of rain.
12 24 707 124			60	39	58	47	S.W.	S.	0 19	—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
13 24 501 114			61	541	59	47	S.	N.	0 04	—	—	Cloudy a.m. Sunshine and clouds p.m. Strong breeze.
14 21 422 79 5			52	542 5	44 5	44	N.E.	N.	0 83	5 5	—	Cloudy, with gleams of sun., showers of rain and snow. Mod. breeze
15 24 684 121 5			49	531	44	38 5	S.W.	N.	0 04	—	—	Sunshine and clouds, with slight snow-showers. Mod. breeze.
16 24 989 107			60	27	58	46	W.	N.	—	—	—	Cloudy, with slight snow-showers a.m. Sunshine and clouds p.m.
17 25 050 119			68	31	66	49 5	O.	S.	—	—	—	Almost constant sunshine.
18 25 076 124 5			70	535	68	50	O.	S.	—	—	—	Cloudless.
19 25 088 125			71	35	69	49 5	O.	S.	—	—	—	Cloudless.
20 25 094 125			71	35 5	69	49 5	O.	S.	—	—	—	Cloudless.
21 25 114 131 5			77	536 5	76	55 5	O.	N. pm	—	—	—	Cloudless.
22 25 120 134			78	536	75	53	O.	N.	—	—	—	Cloudless.
23 25 084 127 5			73	38	70	50	O.	S.	—	—	—	Sunshine and clouds, with slight showers of rain. Mod. breeze.
24 24 928 122			66	538 5	66	49 5	S.	S.	0 24	—	—	Almost constant sunshine.
25 24 899 123 5			64	35 5	60	51 5	S.	N.	—	—	—	Almost constant sunshine.
26 24 862 129			65	34	62	48 5	S.	S.	—	—	—	Sunshine and clouds. Mod. breeze.
27 24 821 94 5			61	41	60	47	S.	S.	—	—	—	Sunshine and clouds. High wind.
28 24 886 125			65	36 5	63	47 5	S.	S.	—	—	—	Cloudy, with gleams of sunshine.
29 24 879 88 5			59	539	57 5	48 5	S.	N.	0 06	—	—	Cloudy, with gleams of sunshine and slight showers of rain.
30 24 887 119			61	44	60	51	S.	S.	0 02	—	—	Cloudy, with gleams of sunshine and slight showers of rain.
31 24 961 124			65	41 5	58	49 5	S.	S.	—	—	—	Sunshine and cloud ^s .

JUNE, 1886.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val. wind.			
1 24 953	129	74	35	5	71	54	O.	S.	—	—	Cloudless. Mod. breeze.
2 24 955	137	76	53	5	74	56	S.	N.	0 12	—	Cloudless save some cumulus. Mod. breeze
3 24 923	120	65	54	4	61	53	S.W	N.	0 05	—	Cloudy, gleams of sun. and slight showers of rain. St. breeze
4 24 851	119	63	40	5	60	52	E.	N.	0 02	—	Cloudy, gleams of sunshine and slight showers of rain.
5 24 741	123	64	40	5	61	51	W.	N.	0 49	—	Cloudy, gleams of sunshine and showers of rain p.m. Mod. breeze.
6 24 720	113	56	54	5	55	49	N.W.	N.	0 16	—	Cloudy, with gleams of sunshine and slight showers of rain.
7 24 721	78	50	43	4	46	44	N.W.	N.	0 37	—	Cloudy, with showers of rain. Mod. breeze.
8 24 703	128	5	51	40	59	51	S.W.	N.	0 58	—	Sunshine and clouds, with slight showers of rain.
9 24 719	59	48	42	43	5	42	S.W.	N.	0 64	—	Cloudy with showers of rain.
10 24 704	81	5	50	36	5	42	N.E.	S.	0 16	—	Cloudy, with gleams of sun. in the morning and showers of rain.
11 24 805	69	5	48	54	5	46	N.W.	N.	0 07	—	Cloudy, with gleams of sunshine, and slight showers of rain.
12 24 829	125	60	54	2	57	51	N.	N.	0 47	—	Sunshine and clouds, slight showers of rain p.m.
13 24 738	77	5	50	41	5	45	N.	N.	0 01	—	Cloudy with showers of rain.
14 24 821	73	5	47	53	5	43	N.	N.	0 06	—	Cloudy, gleams of sunshine and showers of rain. Mod. breeze.
15 24 972	121	62	38	59	50	44	S.W.	N.	0 10	—	Sunshine and clouds with slight showers of rain. Slight breeze.
16 24 806	117	55	54	5	53	44	N.W.	N.	0 01	—	Sunshine and clouds. Mod. breeze.
17 24 812	102	5	47	36	42	40	N.W.	N.	0 11	—	Cloudy, gleams of sun. and slight showers of rain. Mod. breeze
18 24 766	79	45	53	4	44	41	W.	N.	0 16	—	Cloudy, gleams of sun. and slight showers of rain. Mod. breeze
19 24 629	89	48	53	4	42	40	S.W.	S.	0 04	—	Cloudy, gleams of sun. and slight showers of rain. Mod. breeze.
20 24 546	116	57	36	52	45	45	S.W.	N.	0 51	—	Cloudy with a few gleams of sunshine and slight showers of rain.
21 24 606	65	5	43	33	5	40	S.W.	N.	0 38	—	Cloudy, gleams of sun. a.m. Showers of rain p.m. Mod breeze.
22 24 810	117	53	37	48	44	44	N.W.	N.	0 12	—	Cloudy, slight showers of rain till 10 a.m. then sun. and clouds.
23 24 870	85	51	38	46	5	44	S.W.	N.	0 02	—	Cloudy with gleams of sunshine.
24 24 977	120	64	54	50	61	51	N.W.	N.	—	—	Almost constant sunshine. Evening cloudless.
25 25 024	125	68	53	5	66	51	S.W.	S.	0 06	—	Almost constant sunshine.
26 24 983	135	72	39	66	5	52	S.W.	N.	0 02	—	C'dless a.m., sun. and clouds p.m. Cloudy evening. Mod. breeze.
27 24 980	93	58	48	59	5	48	N.W.	N.	0 10	—	Cloudy with gleams of sunshine.
28 24 974	128	63	44	57	54	54	N.W.	N.	0 28	—	Cloudy, gleams of sun. and slight showers of rain.
29 24 900	120	62	54	53	50	48	N.	N.	0 24	—	Cloudy with gleams of sunshine and showers of rain.
30 24 931	73	5	52	45	50	48	W.	N.	—	—	Cloudy with showers of rain.

JULY, 1886.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up. Cur.	Val. wind.			
1 24	991 120 5	69	14	52 5	47 5	N.	N.	N.	0 05	—	Cloudy, showers of rain a.m. Sunshine and clouds p.m. M. breeze
2 25	936 139	71	14	69	55	S.W.	S.W.	N.	—	—	Constant sunshine, but sky not cloudless.
3 25	128 138	71	14	68	56	N.W.	N.W.	N.	—	—	Constant sunshine, but sky not cloudless.
4 25	137 123	68	19	63	52	N.W.	N.W.	N.	0 05	—	Constant sunshine, but sky not cloudless. Moderate breeze.
5 25	139 127	70	12	65	55	S.W.	S.W.	N.	—	—	Cloudless, save some cumulus.
6 25	966 126	75	10	72	58 5	S.W.	S.W.	S.	0 20	—	Cloudless, save some cumulus. Slight shower of rain evening.
7 24	985 132	75	14	74	57	S.W.	S.W.	N.	0 26	—	Sunshine and clouds a.m. Cloudy, with showers of rain p.m.
8 24	855 126	65	19	56	54	N.W.	N.W.	N.	1 20	—	Sunshine and clouds till 9 a.m., cloudy and rain p.m. M. breeze.
9 24	768 120	63	17	49 5	48 5	N.W.	N.W.	N.	0 04	—	Cloudy, with gleams of sunshine. Moderate breeze.
10 24	990 114	54	34	51	49	N.W.	N.W.	N.	0 01	—	Almost constant sunshine. Moderate breeze.
11 25	931 123	61	31	59	49	N.W.	N.W.	N.	—	—	Cloudless, save some cumulus.
12 25	101 121	67	38	62 5	51	N.W.	N.W.	S.	0 21	—	Sunshine and clouds.
13 25	905 136	73	38	67 5	54 5	S.W.	S.W.	N.	0 40	—	Cloudy, gleams of sunshine a.m. Cloudy, slight showers rain p.m.
14 24	841 127	68	547	66 5	55 5	N.W.	N.W.	N.	—	—	Cloudy, with gleams of sunshine.
15 24	831 117	58	548	52 5	50	N.W.	N.W.	N.	—	—	Sunshine and clouds.
16 24	895 126	66	540	62 5	52 5	N.W.	N.W.	N.	—	—	Almost constant sunshine. Strong breeze.
17 24	936 128	70	43	66 5	54	N.W.	N.W.	N.	—	—	Cloudless, save some cumulus.
18 24	985 134	75	39	71	57	O.	N.	N.	—	—	Cloudless
19 25	940 134	82	540	76	55	S.E.	S.E.	N.	—	—	Constant sunshine, but sky not cloudless.
20 25	135 134	82	46	78 5	56	S.W.	S.W.	N.	—	—	Cloudless, save some cumulus. Moderate breeze.
21 25	173 136	83	46	81	57	S.	S.	N.	—	—	Cloudless, save some cumulus. Evening cloudy.
22 25	966 138	84	47	79 5	57 5	N.	N.	N.	0 46	—	Sunshine and clouds a.m. Cloudy, with slight shower of rain p.m.
23 24	991 132	76	53	72 5	61	N.	N.	N.	0 09	—	Sunshine and clouds Some rain p.m.
24 24	808 136	74	49	66 5	59 5	S.W.	S.W.	N.	0 02	—	Sunshine and clouds. Evening cloudless.
25 24	865 128	72	51	70	60	S.	S.	S.	—	—	Sunshine and clouds a.m. Cloudy, with gleams of sunshine p.m.
26 24	818 118	70	549	68	57	S.W.	S.W.	N.	—	—	Sunshine and clouds a.m. Cloudy.
27 24	798 64	54	51	43 5	42	N.W.	N.W.	N.	1 44	—	Cloudy, with gleams of sunshine.
28 25	921 106	54	33	48	44	O.	N.	N.	—	—	Rain and snow p.m.
29 25	931 124	68	32	64 5	51	N.	N.	N.	—	—	Cloudy, with gleams of sunshine.
30 24	938 131	78	38	57	53 5	S.E.	S.E.	N.	—	—	Cloudless.
31 24	841 93 5	57	46	59	49 5	S.E.	S.E.	N.	1 10	—	Cloudy, with gleams of sunshine. Moderate breeze.

AUGUST, 1886.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Upper Current.	Val. wind.		
1 24	931 113 5	56 5 35	49	46 5	N.W.	N.	0 02	Cloudy, gleams of sun. in the aftern'n. Clearing up in the evening		
2 24	877 131 5	68 35 5	53	56 5	W.	S.	0 06	Sunshine and clouds. Mod. breeze.		
3 24	931 123	66 47	64 5	56 5	W.	N.	0 31	Sun. & cl'ds till 3 p.m., then cl'dy & showers of rain. Mod. breeze.		
4 24	929 130	65 46	63	55	N.W.	N.	0 44	Sunshine and clouds. Slight showers of rain p.m.		
5 24	900 67	49 54 5	47	46	N	N.	0 03	Cloudy with gleams of sunshine and slight showers of rain.		
6 24	941 115	56 34 5	55	47	N.W.	N.	0 04	Sunshine and clouds.		
7 25	947 133	69 54 1	66	55 5	N.W.	N.	—	Evening cloudless.		
8 25	145 131 5	77 54 0	75	58	O.	N.	—	Cloudless.		
9 25	089 131 5	76 54 0	73	59	W.	N.	—	Sunshine and clouds.		
10 24	942 133 5	80 54 6	78 5	58	W.	S.	—	Cloudless save some cumulus. Mod. breeze.		
11 24	839 132 5	73 50 5	69	61	S.W.	S.	1 89	Sun. and cl'ds a.m. Cl'dy with thunder and rain p m. St. breeze.		
12 24	955 118	56 36 5	53 5	47 5	N.W.	N.	—	Sunshine and clouds. Evening cloudless.		
13 24	911 127	73 53 2	66 5	53 5	O.	N.	—	Cloudless.		
14 24	897 119	48 54 1	56 5	53	S.W. a.m. N.W. p.m.	N.	—	Sun. & cl'ds till 10 a.m., then cl'dy, showers of rain, gleams of sun.		
15 24	936 130	68 44 5	65	56	S. a.m. S. p.m.	N.	—	Con. sun., sky not cl'dless a.m., sun sometimes obscd by cl'ds p.m.		
16 25	125 126	70 54 2	69	57	S. a.m. N. p.m.	N.	—	Sun sometimes obscd by cl'ds a.m. Con. sun., sky not cl'dless p.m.		
17 25	075 74	72 41	55	53	N.W.	N.	—	Cloudy with showers of rain and gleams of sunshine.		
18 24	886 76	72 54 1	45	44	O.	N.	—	Misty.		
19 24	722 70	72 50 5	51	49	N.	N.	—	Cloudy.		
20 24	866 128	70 54 7	62	51 5	N.	N.	—	Clouds and sunshine a.m. Cloudy p.m.		
21 24	930 137	80 51	66	56 5	S.	N.	—	Con. sun., sky not cloudless a.m. Cl'dy & thun'rstorm 5 to 6 p.m		
22 24	839 136 5	80 54 3	66 5	57 5	N.W. a.m. W. p.m.	N.	0 43	Clouds and sunshine a.m. Cloudy, rain from 3 till 7 p.m.		
23 24	988 128	81 42	64	56	N.W.	N.	0 65	Sunshine and clouds.		
24 24	874 136	80 54 4	64 5	55 5	S.	N.	—	Sunshine and clouds. Slight shower of rain 5 p.m.		
25 24	946 68	80 48 5	52	51 5	N.	N.	0 09	Cloudy with gleams of sunshine and showers of rain.		
26 25	014 71	80 54 8	52 5	51	N.	N.	0 32	Cloudy with gleams of sunshine. Evening clear.		
27 24	967 128	81 42	67	59	N.	N.	0 15	Constant sunshine, but sky not cloudless.		
28 25	068 132 5	80 43 5	72 5	61	S.W.	N.	—	Cl'dless save some cumulus a.m. Con. sun., sky not cl'dless p.m.		
29 25	011 141	80 54 1	76 5	62 5	S.W.	N.	—	Cloudless save some cumulus.		
30 25	112 135	79 54 6	75	62	N. a.m. S. p.m.	N.	0 26	Constant sunshine, sky not cloudless. Evening thunderstorm.		
31 25	160 132	76 54 5	74	63 5	S. E.	N.	0 07	Cl'dless, some cumulus p.m. E'ning rain & thunder; Mod. breeze.		

SEPTEMBER, 1886.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in	Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val. wind.				
1 25 150 133		79	46		75 5	50	N.E.	S.	—	—	—	Cloudless save some cumulus.
2 25 118 130 5		78	43 5		75 56	56	S.W.	N.	0 10	—	—	Cloudless a.m. Clouding over p.m. Rain evening.
3 25 079 124		69	45		66 57 5	57 5	N.E.	S.	0 0	—	—	Sunshine and clouds. Some rain p.m.
4 25 105 117		66	42 5		63 54	54	S.W.	N.	0 50	—	—	Sunshine and clouds.
5 25 113 127		71	42		67 5 55 5	55 5	S.	N.	0 12	—	—	Cloudless a.m. Sunshine and clouds p.m.
6 25 122 126 5		70	44		67 57 5	57 5	S.W.	N.	—	—	—	Cloudy, with gleams of sunshine. Cloudless evening.
7 25 082 125		72	54 3		67 5 58	58	W.	N.	—	—	—	Sunshine and clouds.
8 24 997 127		74	43 5		73 56	56	S.	S.	0 20	—	—	Sunshine and clouds.
9 25 080 129		65	49		60 5 56	56	N.E.	N.	0 04	—	—	Cloudy, with gleams of sunshine.
10 24 970 123		65	54 2		63 54 5	54 5	S.	S.	0 06	—	—	Cloudy, with gleams of sunshine.
11 25 010 130		71	54 3 5		68 56	56	N.	N.	—	—	—	Almost constant sunshine.
12 25 086 131 5		70	54 2		69 55	55	S.E.	N.	0 20	—	—	Cloudless a.m. Sunshine and clouds p.m.
13 25 127 133 5		74	54 1 5		70 5 55 5	55 5	S.E.	N.	—	—	—	Cloudless a.m. Sunshine and clouds p.m.
14 25 154 133		75	40 5		70 54 5	54 5	S.E.	N.	—	—	—	Cloudless save some cumulus.
15 25 148 136		73	42 5		72 58 5	58 5	N.W.	N.	0 05	—	—	Sunshine and clouds.
16 25 127 130		65	39		62 5 54 5	54 5	N.W.	N.	0 02	—	—	Sunshine and clouds.
17 25 048 132 5		68	38 5		61 5 51 5	51 5	S.W.	N.	—	—	—	Sunshine and clouds.
18 24 991 142		66	50		66 5 55 5	55 5	S.E.	N.	—	—	—	Cloudless a.m. Sunshine and clouds p.m.
19 24 952 131 5		70	38		68 56	56	S.	N.	—	—	—	Cloudless till 9 a.m., then sunshine and clouds.
20 24 831 128		66	36 5		62 50	50	S.W.	S.	0 10	—	—	Cloudless a.m. Sunshine and clouds p.m.
21 24 685 133 5		67	54 3 5		59 51	51	S.W.	N.	0 19	—	—	Cloudless till 7 a.m., then clouding over. Cloudy p.m.
22 24 667 100 5		58	53 7 5		56 5 48	48	S.W.	N.	0 34	—	—	Cloudy with gleams of sunshine.
23 24 706 59		55	45		50 49	49	S.W.	N.	0 01	—	—	Rain.
24 24 771 107 5		45	38 5		41 5 40 5	40 5	N.E.	N.	—	—	—	Cloudy with gleams of sunshine. Strong breeze.
25 24 912 117 5		50	31		46 5 41 5	41 5	N.E.	N.	—	—	—	Sunshine and clouds. Evening clear. Mod. breeze.
26 25 000 118		55	52 5		52 5 43	43	W.	N.	—	—	—	Sunshine and clouds. Mod breeze.
27 25 147 126		60	52 7 5		59 47	47	S.W.	N.	—	—	—	Cloudless save some cumulus.
28 25 204 131 5		68	27 5		66 5 53	53	N.W.	N.	—	—	—	Sunshine and clouds.
29 25 213 129		70	37 5		68 5 55 5	55 5	O.	N.	—	—	—	Cloudless.
30 25 120 129		71	36 5		68 5 51	51	N.	N.	—	—	—	Almost cloudless.

OCTOBER, 1886.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up. Curr.	Val. wind.			
1 24 953 129		73	36		72	52	O.	S.	—	—	Cloudless.
2 24 987 130		72	36	5	70	54	O.	N.	—	—	Cloudless.
3 25 095 132	5	76	53	74	73	57	O.	N.	—	—	Cloudless.
4 25 086 133		74	53	73	73	55	O.	N.	—	—	Cloudless.
5 24 939 130	5	74	53	74	53	5	O.	S.	—	—	Cloudless.
6 24 938 60	5	57	38	48	46	46	S.	N.	0 06	—	Cloudy, with slight showers of rain.
7 24 820 110		59	53	5	57	50	S.	S.	0 06	—	Cloudy, with gleams of sunshine.
8 24 954 132		60	53	54	54	48	S.	S.	0 01	—	Sunshine and clouds.
9 24 871 128		57	53	5	54	47	S.W.	N.	0 03	—	Sunshine and clouds.
10 24 997 94	5	48	31	46	5	43	N.W.	N.	0 03	—	Cloudy, with gleams of sunshine. Mod. breeze.
11 24 966 78		48	24	5	47	5	W.	N.	0 03	—	Cloudy, with gleams of sunshine. Mod. breeze.
12 24 923 118		59	53	1	59	46	W.	S.	0 02	—	Cloudless, save some cirrus. Mod. breeze.
13 24 685 107	5	51	54	5	41	40	S.	S.	0 38	1 25	Rain a.m. Cloudy, with gleams of sunshine p.m.
14 24 699 104		45	53	38	5	35	S.	N.	0 20	2 75	Cloudy, with gleams of sunshine and slight showers of snow.
15 24 722 116	5	47	26	5	44	37	W.	S.	—	—	Sunshine and clouds.
16 24 223 56		46	33	5	41	38	S.W.	N.	0 29	0 75	Cloudy, with rain and snow.
17 24 256 117		49	52	5	46	5	S.W.	N.	—	—	Sunshine and clouds.
18 24 511 117	5	53	50	5	52	42	S.	N.	—	—	Sunshine and clouds.
19 24 673 121	5	60	35	5	55	44	S.	N.	0 04	—	Sunshine and clouds.
20 24 823 121		57	53	5	52	47	S.	N.	0 06	—	Constant sunshine, but sky not cloudless.
21 24 752 59		48	54	5	40	40	S.W.	N.	0 88	0 75	Cloudy, with rain and snow.
22 24 942 115	5	43	32	42	39	36	S.W.	N.	—	—	Cloudy a.m. Sunshine and clouds p.m. Cloudless evening
23 24 944 110	5	51	22	5	42	39	S.W.	N.	—	—	Cloudless, save some cirrus.
24 25 047 114	5	55	28	5	53	44	W.	S.	0 01	—	Cloudless, save some cumulus.
25 25 096 122		56	52	53	53	41	W.	S.	0 01	—	Almost constant sunshine. Mod. breeze.
26 24 886 119	5	62	33	62	51	47	S.E.	S.	0 03	—	Cloudy, with gleams of sunshine.
27 24 810 76	55	41	53	5	53	5	S.E.	S.	—	—	Misty. Clearing up towards evening.
28 25 047 118	63	40	5	64	51	47	O.	S.	—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
29 25 219 122		67	33	5	50	48	N.E.	N.	—	—	Cloudless.
30 25 184 110		61	32	5	58	48	O.	N.	—	—	Sunshine and clouds. Evening cloudless.
31 25 094 122		63	31	5	60	49	O.	N.	—	—	Cloudless.

NOVEMBER, 1886.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind		Amount of water.	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry Bulb.	Wet Bulb.	Up Curr.	Val. wind.			
1 25	050 131		59	52 9	58	47	O.	N.	—	—	Cloudless.
2 25	118 117	5	58	28	57	46	O.	N.	—	—	Cloudless.
3 25	074 110		57	29	53	41	W.	S.	—	—	Cloudy, save some cirrus.
4 24	046 119		53	27	50	42	W.	S.	—	—	Cloudy, with gleams of sunshine.
5 24	718 85	5	40	35	49	41	S.	S.	0 04	—	Cloudy, with gleams of sunshine. Mod. breeze.
6 24	515 94		48	39	47	41	S.	S.	0 06	—	Cloudy, with gleams of sunshine, and slight showers of rain.
7 24	533 90		49	37	49	45	S.	S.	0 59	2 00	Cloudy, with gleams of sunshine, and slight showers of rain.
8 24	019 105	5	55	35	48	42	S.	N.	0 02	—	Sunshine and clouds.
9 24	459 115		41	28	53	31	S.	N.	0 03	—	Strong breeze.
10 24	510 99		46	524	44	37	S.	N.	0 18	—	Cloudy, with gleams of sunshine. Evening rain. Mod. breeze.
11 24	663 89		45	524	5	36	S.	N.	0 05	1 25	Cloudy, with gleams of sunshine, and slight snow showers.
12 24	637 80		37	26	36	34	S.	N.	—	—	Cloudy, with gleams of sunshine.
13 24	010 51		37	519	5	37	W.	N.	0 03	0 75	Sunshine and clouds.
14 24	537 100	5	40	21	39	34	W.	N.	—	—	Evening cloudless.
15 24	722 80		41	25	5	33	W.	N.	0 01	—	Cloudless, save some cirrus.
16 24	758 109		49	524	47	38	W.	N.	0 01	0 05	Cloudy till 3 p m., then sunshine and clouds.
17 24	868 45		37	523	36	33	W.	N.	0 39	8 25	Cloudy, with gleams of sunshine.
18 24	796 112		39	526	5	33	W.	N.	0 37	6 00	Cloudy, with snow showers.
19 24	897 38		32	23	5	27	W.	N.	—	—	Cloudy till 9 a.m., then sunshine and clouds.
20 25	036 108	5	32	521	5	28	N.	N.	—	—	Cloudless.
21 25	007 105		33	5	6	29	O.	N.	—	—	Cloudy, with gleams of sunshine. Mod. breeze.
22 24	914 79	5	32	5	9	31	N.	N.	0 25	—	Cloudy till 9 a.m., then almost constant sunshine.
23 25	050 100		32	16	27	24	O.	N.	0 01	—	Cloudless.
24 25	077 104	5	31	11	5	23	O.	N.	—	—	Cloudless, save some cirrus.
25 25	044 104		31	5	25	23	N.	N.	—	—	Cloudless.
26 25	031 103	5	42	16	36	32	O.	N.	—	—	Cloudless.
27 25	040 99	5	41	7	35	31	O.	N.	—	—	Cloudless.
28 25	007 104		43	16	37	32	O.	N.	—	—	Cloudless.
29 24	897 101		42	516	5	39	O.	N.	—	—	Cloudy, with gleams of sunshine.
30 24	600 65		36	14	34	31	S.	N.	0 14	2 25	Cloudy, with gleams of sunshine.

DECEMBER, 1886.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water.	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up	Val. wind			
1 24	609	43 5	31 5	18	26	25	N.W.	N.	0 20	2 25	Cloudy, with snow. Moderate breeze.
2 24	440	43	23 5	20 5	22 5	22	N.W.	N.	0 16	2	Cloudy, with snow. Moderate breeze.
3 24	613	104	26 5	15 5	23 5	22	N.W.	N.	0 05	0 75	Cloudy, with gleams of sunshine.
4 24	568	98	20 5	5	17 5	16 5	N.W.	N.	0 01	0 25	Cloudy, with gleams of sunshine, and slight snow showers.
5 24	687	91	22 5	5 5	19 5	17 5	O.	N.	—	—	Cloudless.
6 24	914	92 5	31 5	3	26	23 5	N.W.	N.	—	—	Cloudless a.m. Sunshine and clouds p.m.
7 24	505	112	44 5	15	30	32 5	S	N.	0 01	0 25	Sunshine and clouds.
8 24	462	101	34 5	10 5	40	25	S.W.	S.	0 05	0 75	Cloudless a.m. Sunshine and clouds p.m.
9 24	080	49 5	33 5	20	32 5	33	S.W.	N.	—	—	Cloudy.
10 24	316	57 5	31 5	13	25	23 5	N.W.	N.	0 02	0 25	Cloudy, gleams of sunshine, slight showers of rain p.m. M. breeze
11 24	728	108	30 5	12 5	26	23	N.W.	N.	0 07	1 75	Constant sunshine, but sky not cloudless.
12 24	637	52	35 5	22	35	33	S.W.	N.	0 63	8	Cloudy, with snow showers.
13 24	790	105	37	23	33	29	N.W.	N.	—	—	Cloudy, with snow till 9 a.m., then clearing up. Cloudless p.m.
14 24	750	108	41	17	35 5	36	W.	S.	—	—	Cloudless, save some cirrus.
15 24	680	91	44	25	41	36	W.	S.	0 05	0 75	Cloudy, with gleams of sunshine. Moderate breeze.
16 24	425	96	44 5	30	42	36 5	S.W.	S.	0 28	2	Cloudy, with gleams of sunshine. Moderate breeze.
17 24	586	47	39	26	32	31	S.W.	S.	—	—	Cloudy.
18 24	608	61 5	38	16	35	32 5	S.	S.	—	—	Cloudy.
19 24	612	111	50	37	47	39	S.W.	S.	—	—	Almost constant sunshine.
20 24	443	77	43 5	34 5	41 5	38	S.	S.	0 59	13 75	Cloudy, with gleams of sunshine.
21 24	420	45 5	39 5	16 5	15 5	15	S.	S.	0 41	4 75	Snow. Moderate breeze.
22 24	759	40	13 5	8 5	13	12 5	N.W.	N.	0 01	0 25	Cloudy.
23 24	551	56	25	—	24	22	W.	N.	0 05	1	Cloudy, with snow showers.
24 24	633	97 5	27	6	25	22 5	W.	S.	0 11	2 5	Sunshine, save some cirrus.
25 24	638	45	24 5	15 5	22	21 5	N.W.	N.	0 09	2	Snow. Clearing up evening. Moderate breeze.
26 24	846	70	23 5	—	17 5	15 5	O.	N.	—	—	Cloudless.
27 24	568	46	29	8	26 5	25 5	N.W.	N.	0 11	2	Cloudy, with snow showers.
28 24	895	99 5	26	13	20	19	N.W.	N.	0 05	0 25	Cloudy, with gleams of sunshine.
29 24	576	52	28 5	13 5	27 5	25	N.W.	N.	0 05	0 75	Cloudy, with gleams of sunshine.
30 24	649	72	23 5	12 5	20 5	19 5	N.W.	N.	0 01	0 25	Cloudy, with gleams of sunshine.
31 24	743	69	23	15	20	19	E.	N.	0 01	0 25	Cloudy, with gleams of sunshine in the afternoon. Mod. breeze.

JANUARY, 1887.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val wind			
1 24 645	70		16	-3 5	14 5	13 5	E.	N.	—	—	Sunshine and clouds.
2 24 392	98		25 5	-3 16	15	15	N.E.	N.	—	—	Sunshine and clouds.
3 24 694	93		25	3	20 5	18 1	O.	N.	—	—	Cloudless.
4 24 400	85		26	-4	22 5	19 5	S.E.	N.	—	—	Sunshine and clouds. Mod. breeze.
5 24 139	49		30	9 5	29	26	S.E.	S.	—	—	Cloudy.
6 24 050	101		31 5	4 5	22 5	19 5	N.W.	S.	—	—	Cloudless save some cirrus.
7 24 154	99		29	-1	21 5	19	N.	N.	—	—	Cloudless save some cirrus.
8 24 334	95		31	2	25 5	22	S.W.	N.	—	—	Cloudless save some cumulus on the horizon p.m.
9 24 321	45		32	14 5	31	30 5	S.W.	S.	0 20	2 75	Cloudy with gleams of sunshine p.m.
10 24 677	73		27 5	10	22	21 5	N.E.	N.	0 01	0 25	Cloudy.
11 24 702	101 5		34	6	26 5	24	O.	N.	—	—	Cloudless.
12 24 944	103		39	12	38	29 5	O.	N.	—	—	Cloudless.
13 24 019	105		37 5	8 5	35	29	O.	N.	—	—	Cloudless.
14 24 734	100		32	1 5	21 5	19	O.	N.	—	—	Cloudless.
15 24 075	96		28	-3 5	22 5	20	O.	N.	—	—	Cloudless.
16 24 668	100		30 5	1	27	24	O.	N.	—	—	Cloudless.
17 24 697	95		29	-1	23 5	19 5	O.	N.	—	—	Cloudless save some cirrus.
18 24 866	89		29 5	-2	23	20 5	N.W.	N.	—	—	Almost constant sunshine.
19 25 006	102 5		34	14	30 5	28 5	N.W.	N.	—	—	Sunshine and clouds a.m. Cloudless p.m.
20 24 991	114 5		41	9	38 5	32 5	O.	N.	—	—	Cloudless.
21 25 200	108		40	14	38	31 5	O.	N.	—	—	Cloudless.
22 25 273	109 5		45	12 5	38	32 5	O.	N.	—	—	Cloudless.
23 25 172	106		45	12 5	37	31	O.	N.	—	—	Cloudless.
24 25 049	110		48	15	38	33	O.	N.	—	—	Cloudless.
25 25 161	111		45	15	37 5	32	O.	N.	—	—	Cloudless.
26 25 237	110		45	13 5	39	31 5	O.	N.	—	—	Cloudless.
27 25 196	112		47 5	14	36	31	O.	N.	—	—	Cloudless.
28 25 237	107 5		44 5	16	38	32	O.	N.	—	—	Cloudless.
29 25 223	107		46	12 5	39	32 5	O.	N.	—	—	Cloudless.
30 25 162	110		48 5	16 5	44	40	O.	N.	—	—	Cloudless.
31 25 081	109		46	17	40	33	O.	N.	—	—	Cloudless.

FEBRUARY, 1887.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water.	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry Bulb.	Wet Bulb.	Up Curr.	Val. wind.			
1 24 976 112 5		42 5 11			37	32 5	S W.	S.	—	—	Constant sunshine, but sky not cloudless.
2 24 944 102		41 5 13			35 5	32	O.	S.	—	—	Cloudless.
3 25 778 104		39 5 10 5			30	32 5	N.	N.	—	—	Cloudless save some cumulus p.m. Mod. breeze.
4 25 316 105		43 14			35	31 5	O.	N.	—	—	Cloudless.
5 25 327 108 5		48 16			39	33	O.	N.	—	—	Cloudless.
6 25 176 106 5		41 5 13			39 5	31 5	O.	N.	—	—	Cloudless. Mod. breeze.
7 25 062 101 5		36 8			30 5	29	W.	N.	—	—	Cloudless save some cumulus in the evening. Mod. breeze.
8 25 012 89 5		25 -5			19 5	16 5	O.	N.	—	—	Cloudless.
9 24 800 91		20 -3 5			15 5	12 5	O.	N.	—	—	Cloudless.
10 24 737 45		17 5 -4 5			13 5	13	E.	S.	0 08	1 25	Cloudy with snow showers.
11 24 906 112		37 5 4			35	27 5	S.	N.	—	—	Cloudless.
12 24 923 104		39 10 36			36	32 5	S.E.	N.	—	—	Sunshine and clouds.
13 24 949 108		44 13 5 41 5			41 5	33	O.	S.	—	—	Cloudless.
14 24 832 105		42 5 11 5			37	32 5	O.	N.	—	—	Cloudless.
15 24 841 106		42 9 36			32	32	O.	N.	—	—	Cloudless.
16 24 862 101 5		36 5 4			32	26	O.	N.	—	—	Cloudless.
17 24 796 101		33 1			28 5		O.	N.	—	—	Cloudless.
18 24 733 100		33 5 -3			26	19 5	O.	N.	—	—	Cloudless.
19 24 720 61		29 2 5			25	22 5	N.W.	N.	0 04	2 25	Cloudy with slight snow shower in the evening.
20 24 676 73		30 17 27 5			25	25 5	N.	N.	0 01	0 25	Cloudy. Mod. breeze.
21 24 753 55		26 17 5			25	23	E.	N.	—	—	Sunshine and clouds. Mod. breeze.
22 24 902 61 5		31 1			29	25	O.	N.	—	—	Cloudless.
23 25 071 106 5		44 10 5 47 5			37	30 5	O.	N.	—	—	Cloudless.
24 25 101 115 5		51 5 16 5			47 5	38	O.	N.	—	—	Cloudless.
25 25 052 116		48 5 15 5			43 5	35	N.	N.	—	—	Cloudless.
26 25 107 110		38 5 24			33	32	N.W.	S.	0 02	0 75	Cloudy a.m., sunshine and clouds p.m. Mod. breeze.
27 25 142 105		40 5			35 5	28 5	O.	N.	—	—	Cloudless.
28 25 258 111		48 13 5			42	34	O.	N.	—	—	Cloudless.

MARCH, 1887.

Date.	Barom.	Solar radiation.	Max. Min.	Hygrometer		Wind.		Amount of water	Snow in	Eng. ins.	GENERAL DESCRIPTION.
				Dry bulb.	Wet bulb.	Up Cur	Val. wind.				
1 25	220.114	49	13 5	44 5	35	O.	N.	—	—	—	Cloudless.
2 25	235.115	51	5 13	46	36 5	O.	N.	—	—	—	Cloudless, save some cumulus.
3 25	238.119 5	53	5 18	48	36	N.E.	S.	—	—	—	Cloudless save some cirrus.
4 25	148.120	56	19 5	49	39 5	S.W.	N.	—	—	—	Constant sun. h. i.e., but sky not cloudless.
5 24	915.118 5	55	5 21	51	39	O.	N.	—	—	—	Cloudless.
6 24	814.119 5	55	20 5	52	41 5	O.	N.	—	—	—	Cloudless.
7 24	922.117	53	20 48	48 5	37	O.	N.	—	—	—	Cloudless.
8 24	966.111 5	55	20 5	50	38 5	S.E.	S.	—	—	—	Cloudless a.m. Sunshine and clouds p.m. Mod. breeze.
9 24	920.110	49	5 20	47	37	N.W.	N.	0 01	0 25	—	Sunshine and clouds. Some snow evening. Mod. breeze.
10 24	782.121 5	47	5 25	41 5	36	S.W.	N.	—	—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
11 24	710.116 5	50	19 42	5	36 5	W.	S.	0 06	2	—	Sunshine and clouds. Strong breeze.
12 24	586.113 5	48	23 5	46	39	W.	N.	0 08	1 50	—	Cloudy with gleams of sun. a.m. Showers of snow p.m. St. breeze.
13 24	509 70	38	5 20 5	22 5	22	N.E.	N.	0 15	3 50	—	Cloudy with gleams of sunshine. Strong breeze.
14 24	330 93	28	5 12	25 5	23 5	S.	N.	0 01	0 25	—	Cloudy with gleams of sunshine a.m. Strong breeze.
15 24	352.108 5	30	10 35	11	32	S.E.	N.	0 06	2	—	Cloudy with slight showers of snow. Strong breeze.
16 24	210.102	35	5 11	32	30	S.E.	N.	0 07	1 50	—	Cloudy with gleams of sunshine. Strong breeze.
17 24	349 52	18	5 10	16 5	16	S.E.	N.	0 01	0 25	—	Cloudless.
18 24	612 84	21	7 18	19	18	O.	N.	—	—	—	Sunshine and clouds.
19 24	791.102	40	5 30	30	24	S.W.	S.	—	—	—	Sunshine and clouds. Mod. breeze.
20 24	822.120	47	5 9	45	36 5	S.	S.	0 05	—	—	Cloudy with gleams of sunshine a.m., and slight rain and snow p.m.
21 24	758 93	43	5 20 5	40 5	34	S.W.	S.	0 28	—	—	Cloudy. Mod. breeze.
22 24	761 97 5	47	27 45	38	37	W.	N.	0 11	4	—	Cloudy with gleams of sunshine. Mod. breeze.
23 24	738 98	48	25 37	47	38 5	W.	N.	0 11	2	—	Snow till a.m., then sun. and c'd's. Evening cloudy. S. breeze
24 24	748.121	50	30 42	42 5	37	W.	N.	0 11	2	—	Snow. Strong breeze.
25 24	616.120	41	5 28	33	32	W.	N.	0 23	5 25	—	Cloudy with gleams of sunshine. Mod. breeze.
26 24	763 46	38	5 22	27	31	W.	N.	0 07	2	—	Cloudy with gleams of sun., and slight showers of snow. S. breeze.
27 24	926.121 5	38	21 35	31	31	W.	N.	0 07	1 75	—	Sunshine and clouds. Mod. breeze.
28 24	740 87	36	5 25	33 5	32	N.W.	N.	0 13	2 50	—	Cloudy with gleams of sun., and slight showers of snow. M. breeze.
29 24	837.121	40	20 5	32	31	N.W.	S.	0 06	1 25	—	Sunshine and clouds. Evening almost cloudless. Mod. breeze.
30 24	734 86	33	13 30	32	31	N.	N.	—	—	—	
31 24	792.124 5	36	12 30	26	26	N.	N.	—	—	—	

APRIL, 1887.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind		Amount of water.	Snow in Eng. in.	GENERAL DESCRIPTION.
					Dry Bulb.	Wet Bulb.	Up Curr.	Val wind.			
1 24 388.99			40.5	10	37	31.5	S. W.	N.	—	—	Cloudy with gleams of sunshine. Strong breeze
2 24 611.117			47	17	43	35.5	S.	N.	—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
3 24 800.117			51	5.17	47	38	O.	N.	—	—	Cloudless. Mod. breeze.
4 24 763.124			60	5.19	50	42.5	O.	N.	—	—	Cloudless. Slight breeze.
5 24 522.121			55	24	53	42	S.	S. N.	—	—	Sunshine and clouds. Strong breeze
6 24 405.106			50	3.35	47	38	S.	N.	—	—	Sunshine and clouds. Slight breeze.
7 24 387.129			54	26	49	40.5	E.	S.	—	—	Sunshine and clouds. Mod. breeze.
8 24 509.125			50	5.27	48	42	S.	N.	—	—	Sunshine and clouds. Strong breeze.
9 24 652.114			50	5.30	45	39	S.	N.	—	—	Cloudless save some cumulus. Mod. breeze.
10 24 732.120			56	5.22	53	41	N. E.	N.	—	—	Almost constant sunshine. Strong breeze.
11 24 843.126			55	24	48	37.5	N. W.	N.	—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
12 24 903.119			53	25	49	32.5	S.	S.	0.01	—	Sunshine and clouds. Mod. breeze.
13 24 782.129			53	5.27	46	37.5	S.	N.	0.36	3	Sun. & cl'ds till 9 a.m., then cl'dy. Snow-showers p.m. M. breeze.
14 24 622.83			44	5.28	40	36	S. E.	N.	0.01	5	Cl'dy and slight snow-showers a.m. Sun. and cl'ds p.m. S. breeze.
15 24 749.106			31	5.20	26	24	S.	N.	0.03	0	Sunshine and clouds with slight snow-showers. Strong breeze.
16 24 554.100			29	17	27	25	E.	N.	—	—	Constant sunshine, but sky not cloudless. Strong breeze.
17 25 224.98			35	5.12	31	28	O.	N.	—	—	Cloudless. Mod. breeze.
18 24 960.108			45	9	41	33	O.	N.	—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
19 24 961.125			53	17	49	37.5	N. W.	N.	—	—	Cloudless save some cirrus. Mod. breeze.
20 24 937.128			56	30	50	40	W.	N.	—	—	Cl'dless, some cirrus a.m. Con. sun., sky not cl'dless p.m. M. breeze.
21 24 747.126			63	26	60	44	E.	S.	—	—	Cl'dless, some cirrus till 10 a.m., then sun. & cl'ds. Slight breeze.
22 24 646.120			62	5.27	58	44	S.	S.	0.03	—	Cl'dless, some cumulus a.m. Sun. and cl'ds p.m. Mod. breeze.
23 24 614.98			56	28	52	41	S.	S.	0.04	—	Cloudy till 9 a.m. then sunshine and clouds. Mod. breeze.
24 24 680.119			57	5.31	53	41.5	S. W.	N.	0.37	4	Rain and snow. Mod. breeze
25 24 836.125			55	34	57	43	S.	N.	—	—	Con. sun., sky not cloudless a.m., cloudless p.m. Slight breeze.
26 24 811.74			42	5.25	41	33	S. W.	N.	—	—	Sunshine and clouds.
27 24 982.120			48	25	43	37.5	N. W.	N.	—	—	Cloudless save some cirrus. Mod. breeze.
28 24 998.109			55	24	52	40	W.	S.	—	—	Sunshine and clouds. Mod. breeze.
29 24 938.117			51	5.32	59	45	S. W.	S.	—	—	
30 24 911.116			61	35	57	46	S. W.	S.	—	—	

Date.	Barom.	Solar radiation.	Max. Min.	Hygrometer		Wind.		Amount of water	Snow in Eng. ins.	GENERAL DESCRIPTION.
				Dry bulb.	Wet bulb.	Up.	Cur.			
1 24	891.124		63 5 33	61	46	W.		—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
2 24	771.123		62 5 11	60	47 5	S.		0 09	—	Sunshine and clouds. Mod. breeze.
3 24	717.120		65 5 16 5	63 5	47	S.		0 14	—	Slight showers of rain p.m. Mod. breeze.
4 24	816.113		51 4 33	43	41 5	S.		0 06	—	Cloudy, gleams of sun, and slight showers of rain. St. breeze.
5 24	846.113		51 4 33	43	46 5	S.		—	—	Cloudless till 8 a.m., then sunshine and clouds. Mod. breeze.
6 24	874.120		57 3 33	34	43 5	S.		—	—	Sunshine and clouds. Mod. breeze.
7 24	832.102		51 3 1	46	38	N.		0 23	—	Cl'dy with gleams of sun, and slight showers of rain. M. breeze.
8 24	835.102		41 3 1	39	38	N.		0 18	—	Cloudy with showers of rain. Mod. breeze.
9 24	835.102		47 5 32	40	38 5	N.		0 20	—	Cloudy with gleams of sunshine. Mod. breeze.
10 24	885.105		52 3 35	49 5	42 5	N.		0 21	—	Sunshine and clouds. Slight rain in the evening.
11 24	853.103		50 3 5	46	39 5	N.W.		0 17	0 75	Sunshine and clouds a.m. Cloudy with showers of rain p.m.
12 24	836.102	5	39 3 2 5	35 5	35	W.		0 10	—	Rain and snow till 5.30 p.m., then clearing up.
13 24	832.97 5	41 5 31	43	36	36	W.		—	—	Cl'dy with gleams of sun, and slight showers of snow.
14 24	862.79	8 5 3	37	33	33	N.W.		0 04	—	Cloudy with slight showers of snow. Strong breeze.
15 24	733.102 5	47 3 5	44	35	35	W.		—	—	Sunshine and clouds. Mod. breeze.
16 24	819.111	51 2 3 5	48 5	37	37	S.W.		0 08	—	Sunshine and clouds. Mod. breeze.
17 24	826.113	47 3 3	43 5	40 5	38 5	N.W.		0 03	—	Cloudy with gleams of sunshine. Mod. breeze.
18 24	815.97	47 5 3 5	40	38 5	40	N.W.		0 07	—	Cl'dy a.m., sun. & cl'ds p.m. Sl. showers of rain & snow. M. br.
19 24	850.118	50 2 9	43 5	40	40	N.W.		0 36	—	Sunshine and clouds. Mod. breeze.
20 24	714.112	56 3 3	54 5	43	43	W.		0 09	4	Sunshine and clouds. Mod. breeze.
21 24	653.60	31 5 25	31 5	27	26	N.W.		0 02	—	Cloudy with snow-showers. Mod. breeze.
22 24	717.109	39 1 3 5	36 5	32 5	32 5	S.W.		0 04	—	Cl'dless 8 a.m., sun. & cl'ds a.m. Cl'dy, snow-sho'rs p.m. St. br.
23 24	711.114	43 5 21	39	33 5	33 5	N.W.		0 05	—	Cl'dy slight showers of snow and gleams of sun. Strong breeze.
24 24	908.106	45 2 7	42 5	35	35	N.W.		0 01	—	Sunshine and clouds. Mod. breeze.
25 24	783.98 5	47 2 6	45	39	37 5	N.W.		0 01	—	Sunshine and clouds. Mod. breeze.
26 24	710.115	53 2 6	40 5	40	38 5	S.		0 34	0 75	Cl'dy, gleams of sun. a.m. & sl. showers of rain & snow p.m. S. br.
27 24	662.108 5	43 5 29 5	40 5	40	38 5	W.		—	—	Cloudy a.m. Clearing up p.m. Mod. breeze.
28 24	805.103	49 3 3	51	41	38 5	W.		—	—	Sunshine and clouds. Mod. breeze.
29 24	826.118 5	60 3 5	57	50 5	46	S.W.		—	—	Sunshine and clouds.
30 24	918.94	59 5 41	56 5	50 5	50 5	W.		0 11	—	Constant sunshine, sky not cloudless a.m. Sun. and clouds p.m.
31 24	962.126	67 4 0	64	50	50	W.		—	—	

JUNE, 1887.

Date.	Barom.	Solar radiation.	Therm.		Wind.	Amount of water	Snow in Eng. ins.	GENERAL DESCRIPTION.
			Max.	Min.	Up. Curr. Val. wind.			
1 24	896 130		68 5	44 5	S. W.	0 02	—	Sunshine and clouds. Slight rain in the evening.
2 24	728 112 5		65 43	50 43	S.	0 04	—	Sunshine and clouds. Moderate breeze.
3 24	751 110		56 40	52 5	S. W.	0 15	—	Sunshine and clouds, with slight showers of rain p.m. M. breeze.
4 25	005 119		58 35	53 5	W.	—	—	Sunshine and clouds. Moderate breeze.
5 25	034 111		58 37	57 50	N. W.	0 06	—	Cloudy, with gleams of sunshine and slight showers of rain.
6 25	022 127		61 43	56 5	N. W.	0 09	—	Cloudy, with gleams of sunshine and slight showers of rain.
7 25	018 127		67 42	63 5	N.	—	—	Almost constant sunshine.
8 25	073 124		71 56	54	O. N.	—	—	Cloudless.
9 25	125 126		73 54	50	O.	0 50	—	Cloudless.
10 25	077 125		67 49	63	N. W.	0 16	—	Sunshine and clouds. Slight breeze.
11 25	111 116		61 57	58	O.	—	—	Cloudless. Moderate breeze.
12 25	058 122		66 53	5	N.	—	—	Almost constant sunshine. Moderate breeze.
13 25	095 123		73 42	69	O.	—	—	Cloudless.
14 25	176 131		77 40	74	O.	—	—	Cloudless.
15 25	173 130		76 54	5	O.	—	—	Cloudless.
16 25	138 131		77 54	75	O.	—	—	Cloudless.
17 25	048 116		66 54	58 5	N.	—	—	Cloudy with gleams of sunshine. Clearing up evening. M. breeze.
18 24	959 122 5		67 56	65	O. N.	—	—	Cloudless. Moderate breeze.
19 25	019 125		72 35	70	O.	—	—	Cloudless, save some cumulus. Moderate breeze.
20 25	039 125		73 54	70	O.	—	—	Sunshine and clouds. Moderate breeze.
21 24	927 115		61 36	59	W.	—	—	Cloudless.
22 24	929 122		68 58	66	O.	—	—	Cloudless.
23 25	001 123		70 35	64	O.	—	—	Moderate breeze.
24 25	040 128		75 37	73	O.	—	—	Cloudless. Moderate breeze.
25 25	056 135		77 54	5	N. W.	0 08	—	Sunshine and clouds. Cloudy in the evening.
26 25	048 110		69 49	67	N.	0 17	—	Cloudy, with gleams of sunshine. Slight rain in the evening.
27 24	929 128		71 43	5	N.	—	—	Almost cloudless.
28 24	965 125		71 45	68 5	W.	0 78	—	Sunshine and clouds. Cloudy in the evening.
29 25	011 103 5		52 54	46	W.	0 03	—	Cloudy, with gleams of sunshine. Moderate breeze.
3 25	018 129		65 54	61	E.	—	—	Sunshine and clouds.

JULY, 1887.

Date.	Barom.	Solar Radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in	Eng. Ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val. wind.				
1 25 017 127	69	543	5	57	N.	N.			0 02	—	—	Sunshine and clouds. Moderate breeze.
2 25 079 121	68	41	56	58	N.	S.			0 03	—	—	Sunshine and clouds. Slight shower of rain p.m. Mod. breeze.
3 25 151 136	76	40	38	55	N.W.	N.			0 07	—	—	Cloudless save some cumulus till 4 p.m.; then slight thunderstorm
4 25 049 133	75	42	72	55	N.W.	N.			0 54	—	—	Almost cloudless.
5 24 871 128	73	45	70	56	S.W.	S.			0 50	—	—	Cloudless a.m. Sunshine and clouds p.m. Rain evening. M. breeze
6 24 905 86	57	41	50	49	N.W.	N.			0 02	—	—	Cloudy. Clearing up in the evening.
7 25 051 118	66	34	62	51	N.W.	O.			—	—	—	Cloudless.
8 25 104 124	74	37	71	54	N.	O.			0 02	—	—	Cloudless a.m. Sunshine and clouds p.m. Slight rain evening.
9 25 063 137	78	41	76	59	S.W.	N.			0 29	—	—	Sunshine and clouds.
10 25 030 97	64	538	59	55	W.	N.			0 12	—	—	Sunshine and clouds.
11 25 052 120	68	48	60	56	W.	N.			—	—	—	Sunshine and clouds.
12 25 074 132	73	51	68	59	N.	N.			0 21	—	—	Cloudless evening.
13 25 034 134	76	56	69	58	S.	N.			0 41	—	—	Sunshine and clouds. Cloudy with slight showers of rain p.m.
14 25 082 135	76	46	72	61	N.W.	N.			0 95	—	—	Sunshine and clouds a.m. Cloudy with slight showers of rain p.m.
15 25 083 133	78	47	71	59	N.	S.			0 08	—	—	Almost cloudless. Evening thunderstorm.
16 25 070 110	64	45	58	55	W.	N.			0 87	—	—	Sunshine and clouds. Thunderstorm evening.
17 24 926 118	66	49	63	57	S.W.	N.			0 28	—	—	Sunshine and clouds, with slight showers of rain. Mod. breeze.
18 24 998 99	69	47	53	52	S.W.	S.			0 01	—	—	Cloudless, save some cumulus. Moderate breeze.
19 25 009 129	76	542	74	58	S.W.	S.			0 01	—	—	Sunshine and clouds.
20 25 020 125	77	50	70	61	S.	N.			0 21	—	—	Constant sunshine, but sky not cloudless.
21 25 042 132	78	44	73	56	W.	N.			—	—	—	Almost constant sunshine. Moderate breeze.
22 25 077 133	78	47	77	56	N.	N.			—	—	—	Sunshine and clouds.
23 25 064 113	66	551	60	54	O.	N.			0 01	—	—	Cloudless.
24 25 021 125	75	538	73	56	N.W.	N.			0 17	—	—	Cloudless a.m. Sunshine and clouds 5 p.m.; then thunderstorm.
25 24 868 132	70	13	73	57	S.E.	N.			0 05	—	—	Sunshine and clouds, with slight showers of rain p.m.
26 24 881 122	66	47	61	54	N.	N.			0 47	—	—	Cloudless a.m. Sunshine and clouds p.m.
27 24 997 123	70	544	67	58	N.E.	N.			1 00	—	—	Sunshine and clouds, with slight showers of rain p.m.
28 25 131 110	66	552	64	57	S.	N.			0 01	—	—	Almost constant sunshine. Thunderstorm at 8 p.m.
29 25 098 132	76	44	71	57	N.W.	N.			0 01	—	—	Cloudless a.m. Sunshine and clouds p.m.
30 25 062 136	78	46	73	60	N.W.	N.			—	—	—	Constant sunshine, but sky not cloudless p.m.
31 25 048 132	78	548	74	61	N.	N.			—	—	—	Cloudless a.m.

AUGUST, 1887.

Date.	Barom.	Solar radiatio.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val wind			
1.25 117 132		77	53		73	60	S.W.	N.	0.72	—	Sunshine and clouds till 3 p.m., then a thunderstorm and cloudy.
2.25 060 127		71	47		66	59	S.W.	N.	0.45	—	Cloudless a.m. Cloudy with thunder and rain p.m. Mod. breeze.
3.25 073 125		67	5.50		67	58	N.	N.	0.01	—	Sunshine and clouds. Mod. breeze.
4.25 047 124		67	43		65	56	O.	N.	—	—	Cloudless. Mod. breeze.
5.25 045 126		73	5.38		71	54	O.	N.	—	—	Cloudless. Mod. breeze.
6.25 109 131		74	40		74	57	O.	N.	—	—	Cloudless.
7.25 181 133		78	41		73	56	O.	N.	—	—	Cloudless.
8.25 199 133		76	5.50		70	53	N.W.	N.	—	—	Sunshine and clouds.
9.25 139 130		78	47		77	61	N.W.	N.	—	—	Cloudless save some cumulus. Mod. breeze.
10.24 884 130		74	5.44		73	58	O.	N.	0.12	—	Cloudless. Mod. breeze.
11.31 828 122		69	42		65	52	O.	N.	—	—	Cloudless. Mod. breeze.
12.24 818 129		71	41		69	57	S.W.	N.	—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
1.3.24 886 125		72	45		62	55	S.W.	N.	0.97	—	Cloudless to a.m., then sun. and clouds. Cloudy & rain p.m. M. breeze.
1.12.24 893 101		57	5.40		50	49	W.	S.	0.41	—	Cloudy with showers of rain. Clearing up in the evening.
1.5.24 915 126		70	56		67	57	S.W.	N.	—	—	Constant sunshine, but sky not cloudless.
1.6.24 866 82		62	45		60	53	S.W.	N.	0.77	—	Sunshine and clouds a.m. Rain p.m. Mod. breeze.
1.7.22 824 129		66	5.40		63	57	S.W.	N.	0.93	—	Sun and clouds. Slight showers of rain p.m. Strong breeze a.m.
1.5.24 705 117		56	38		42	40	W.	N.	0.35	—	Cloudy with gleams of sunshine, and slight showers of rain p.m.
1.9.24 715 87		53	32		52	45	S.	N.	0.02	—	Cloudy till 8 a.m., then sunshine and clouds. Evening cloudless.
21.24 732 55		47	41		43	42	S.	N.	0.25	—	Cloudy with gleams of sunshine. Mod. breeze.
21.24 973 123		56	37		51	45	N.W.	N.	0.55	—	Rain.
23.24 995 125		68	28		65	49	O.	N.	—	—	Sunshine and cloud.
24.24 973 126		70	33		67	51	O.	N.	—	—	Cloudless.
25.24 974 127		72	38		68	53	O.	N.	—	—	Cloudless.
26.24 950 137		74	39		72	57	N.W.	N.	0.01	—	Sunshine and clouds. Slight showers of rain p.m.
27.24 990 129		78	41		75	53	O.	N.	—	—	Cloudless.
28.24 983 127		75	5.42		74	56	O.	N.	—	—	Cloudless.
29.24 992 114		66	45		57	54	S.	N.	—	—	Sunshine and clouds. Mod. breeze.
30.24 997 132		74	43		72	57	S.E.	N.	—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
31.24 971 136		73	41		71	56	N.W.	S.	—	—	Sun sometimes obscured by clouds; almost constant sunshine.

SEPTEMBER, 1887.

Date.	Barom.	Solar radiation	Max.	Min.	Hygrometer		Wind.		Amount of water.	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry Bulb.	Wet Bulb.	Up Curr.	Val. wind.			
1 24 955 129 5	72	48 5	70 5	55 5	S.	S.			—	—	Sunshine and clouds. Mod. breeze.
2 24 956 124 70	43	51	61	54	S.	S.			—	—	Sunshine and clouds. Mod. breeze.
3 25 047 125 68	51	61	56	51	S.	S.			0 03	—	Sunshine and clouds.
4 24 951 87	62	50	57	53	W.	W.			0 34	—	Cloudy with gleams of sunshine.
5 24 890 120	66	41	5	54	S.	S.			0 03	—	Sunshine and clouds.
6 24 913 133	74	47	71	53	S.W.	S.			—	—	Cloudless save some cirrus.
7 24 913 131	72	50	5	55	S.	S.			0 15	—	C'dless to a.m., sun. & c'ds. Sl. shower of rain p.m. M. breeze
8 25 088 67	53	51	49 5	48	S.	S.			1 22	—	Cloudy. Rain p.m.
9 25 076 55	48	43	45	44 5	N.W.	N.			0 05	—	Cloudless save some cumulus.
10 24 950 121	63	51	61 5	53 5	N.W.	N.			—	—	Cloudy till 9 a.m., then cloudless save some cumulus.
11 24 876 122 5	65	40	5	53	N.W.	N.			—	—	Sunshine and clouds. Evening cloudy.
12 24 755 128 5	65	40	64	54	S.	S.			0 10	—	Sunshine and clouds. Mod. breeze.
13 24 735 128	62	54	5	53	S.	S.			—	—	Cloudy with gleams of sunshine.
14 24 866 107	50	53	46	43 5	S.	S.			0 01	—	Sunshine and clouds. Evening clear.
15 24 994 116	58	38	52	47	N.E.	N.			—	—	Cloudless. Mod. breeze.
16 25 092 126	67	32	63	50	O.	O.			—	—	Cloudless. Mod. breeze.
17 25 046 126 5	69	34	68 5	52	S.	S.			—	—	Cloudless save some cumulus. Mod. breeze.
18 25 102 125	69	35	5	58 5	N.W.	N.			0 10	—	Cloudy with showers of rain. Mod. breeze.
19 24 985 76	59	39	52	48	N.W.	N.			—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
20 24 900 121 5	62	35	60	52	N.	N.			—	—	Cloudless.
21 24 944 120	59	57	57	47	O.	O.			—	—	Cloudless.
22 24 986 124	64	27	59	46	O.	O.			—	—	Cloudless.
23 25 046 130	65	27	5	46 5	O.	O.			—	—	Strong breeze.
24 24 959 116	57	27	55	45	O.	O.			—	—	Cloudless.
25 24 902 115	55	5	42 5	42 5	O.	O.			—	—	Cloudless.
26 24 724 121 5	61	24	60	45	O.W.	N.			—	—	Sunshine and clouds.
27 24 518 116 5	57	26	53	44	S.	S.			—	—	Rain a.m. Cloudy with gleams of sunshine p.m.
28 24 490 87	49	29	39 5	39	S.E.	N.			0 42	2 75	Snow a.m. Clearing in the after'n. Evening c'dless. M. breeze.
29 24 450 83	39	32	35	33	S.W.	N.			0 30	2 50	Sun. & c'ds 9 a.m., c'dy & snow-sh'ers. Clearing up evening. M. br.
30 24 618 90	41	21	34	32					0 15	1 25	

OCTOBER, 1887.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water Eng. ins.	Snow in	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur	Val. wind.			
1 24	850 15	52	22	46	41		O.	N.	—	—	Cloudless. Moderate breeze.
2 24	947 119	55	25	52	46		O.	N.	—	—	Cloudless.
3 25	806 116	55	23	53	42	5	O.	N.	—	—	Cloudless.
4 24	933 119	59	24	56	45		O.	N.	—	—	Cloudless.
5 24	817 120	57	26	56	5	5	O.	N.	0 12	—	Sunshine and clouds.
6 24	794 103	5	49	35	45		N.W.	N.	—	—	Cloudy, with slight showers of rain and gleams of sunshine.
7 24	769 117	52	5	52	5	5	S.W.	N.	0 03	—	Cloudy till 8 a.m., then almost constant sunshine. Evening cloudless.
8 24	757 111	49	31	43	40		W.	N.	—	—	Cloudy, with gleams of sunshine.
9 24	777 116	5	55	27	50	41	S.	S.	—	—	Almost constant sunshine. Moderate breeze.
10 24	395 118	58	40	57	5	47	S.	S.	0 16	0 75	Sunshine and clouds. Moderate breeze.
11 24	583	93	47	30	34	31	N.W	S.	0 01	0 25	Sunshine and clouds. Moderate breeze.
12 24	542 112	43	518	40	34	5	S.	S.	0 01	0 25	Cloudless 8 a.m.; sunshine & clouds. Evening cloudy. S. breeze.
13 24	590 107	5	47	18	5	36	O.	N.	0 09	0 75	Cloudless. Strong breeze.
14 24	525	54	5	36	5	29	W.	N.	0 06	0 50	Cloudy, with slight snow showers. Moderate breeze.
15 24	521	55	28	51	23	5	N.	N.	0 03	0 50	Cloudy, with slight snow showers. Moderate breeze.
16 24	862	83	30	519	26	5	N.	N.	0 03	1 25	Cloudy a.m. Sunshine and clouds p.m. Moderate breeze.
17 25	056	66	5	30	5	27	N.W	N.	0 08	1 25	Cloudy, with slight snow showers. Moderate breeze.
18 25	151	62	34	24	32	31	N.	N.	0 01	—	Cloudy.
19 25	112 110	47	22	45	40		O.	N.	—	—	Cloudless.
20 25	044 122	56	21	50	5	40	O.	N.	—	—	Cloudless.
21 25	006 111	5	50	22	47	5	O.	N.	—	—	Cloudless.
22 25	157 107	5	46	5	27	44	O.	N.	—	—	Cloudless.
23 25	104 115	55	519	52	5	40	O.	N.	—	—	Cloudless.
24 24	653 114	5	51	23	45	36	W.	S.	0 17	2 50	Sunshine and clouds. Strong breeze.
25 24	747 108	38	5	21	27	5	N.	S.	0 02	0 25	Cloudy, with gleams of sunshine. Moderate breeze.
26 24	986 111	30	512	29	26	26	O.	N.	—	—	Cloudless. Moderate breeze.
27 24	834 110	52	18	45	5	39	O.	N.	—	—	Cloudless.
28 24	726 115	55	22	53	41		O.	N.	—	—	Cloudless.
29 24	817 111	5	52	5	48	38	N.W	N.	—	—	Cloudy till 10 a.m., then sunshine and clouds. Evening cloudless.
30 24	763	74	5	48	29	43	S.W.	S.	0 06	—	Cloudy, with gleams of sunshine. Moderate breeze.
31 24	655 121	54	34	49	41		W.	S. am. N. pm.	0 86	5 25	Cloudy till 8 a.m., then sunshine and clouds.

NOVEMBER, 1887.

Date.	Barom.	Solar radiation	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in Eng. in.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val. wind.			
1 24 453 112			38 5 26		36	32 5	S. S.W.	S. N.	—	—	Sunshine and clouds.
2 24 464 62 5			35 22		34 5	33	S.W.	S.	0 23	2 50	Cloudy. Slight snow-showers p.m.
3 24 469 120			46 5 31		45 5	40	S.W.	S.	0 35	3 75	Cloudless save some cumulus.
4 24 467 77			44 5 32 5		44 5	37	S.	S. N.	0 05	1	Cloudy.
5 24 571 47			39 5 31		32 5	32	N.	N.	—	—	Cloudy with slight snow-showers a.m. Clearing up in the evening
6 24 546 114			41 16 5		39 33	33	O.	N.	—	—	Cloudless.
7 24 551 108			46 16 4		44 33 5	35	S.	S.	0 10	1 50	Almost constant sunshine.
8 24 596 58			38 28 37 5		37 5	35	S.W.	S.	—	—	Cloudy with gleams of sunshine.
9 24 755 103			40 5 20 5		37 36	33 5	N.	S.	—	—	Almost constant sunshine.
10 24 650 114			39 18 5		36 31 5	31 5	E.	N.	0 07	2 50	Sunshine and clouds. Mod. breeze.
11 24 591 60			33 5 24 32		29 28	28	N.W.	N.	—	—	Cloudy. Slight snow-showers p.m.
12 24 770 43			30 5 25		29 31	31	O.	N.	—	—	Cloudy.
13 24 834 100 5			38 18		35 31	31	S.	S.	0 01	0 50	Cloudy with gleams of sunshine. Mod. breeze.
14 24 486 53 5			40 18 40		40 35	26	W.	N.	—	—	Cloudy. Mod. breeze.
15 25 585 45			37 16 27 5		27 5	26	W.	N.	—	—	Cloudy till 8 a.m., then sunshine and clouds. Evening cloudless.
16 24 829 80			26 19 23 5		23 5	22	O.	N.	—	—	Cloudless.
17 24 819 107			46 5 6		42 32 5	32 5	O.	N.	0 15	0 25	Cloudy with gleams of sunshine a.m. Rain p.m.
18 24 601 85			44 5 23		40 5 38	36	S.	S.	0 07	0 25	Cloudy with gleams of sunshine. Mod. breeze.
19 24 387 88			40 31		38 5	36	S.	S.	0 10	1 50	Sunshine and clouds a.m. Cloudy p.m.
20 24 237 162			41 5 28		39 37	37	S.	N.	—	—	Cloudy with gleams of sunshine.
21 24 379 68			32 5 27		31 5 30	32 5	S.	N.	—	—	Sunshine and clouds.
22 24 663 98			39 16 37 5		37 5	33	S.	N.	—	—	Cloudless in the morning. Cloudy from 7 a.m.
23 24 779 82			38 21 37 33		37 33	33	S.	S.	0 24	0 50	Cloudy.
24 24 733 63			42 30 41 5		37 34	37	S.	S.	0 04	—	Cloudy, with slight showers of snow.
25 24 733 63 5			39 32 33		37 34	37	W.	N.	—	—	Cloudy till 9 a.m., then sunshine and clouds. Evening cloudless.
26 24 613 56			39 5 29		37 32	32	O.	N.	—	—	Cloudless.
27 24 875 96			44 19 38		36 32 5	30 5	O.	N.	—	—	Cloudless.
28 24 910 100			38 18 36		37 33	33	O.	N.	—	—	Constant sunshine, but sky not cloudless.
29 24 781 103			44 5 18 5		37 32 5	32 5	S.	N.	0 17	2 50	
30 24 671 94			39 19		35	32 5					

DECEMBER, 1887.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in Fng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up. Cur.	Val. wind.			
1 25 042	85 5	32	22 5	28	26	N.	N.	S.	—	—	Sunshine and clouds.
2 25 217	101	35 5	10	30	28	O.	O.	N.	—	—	Cloudless.
3 25 060	104 5	42	13	37	32 5	S.	S.	N.	—	—	Cloudless
4 24 798	94	44	22 42	37	35	S.	S.	N.	0 30	3 75	Sunshine and clouds.
5 24 772	51	36 5	31	36	35	S.	S.	N.	—	—	Cloudy.
6 24 707	88	36	23	33	32	N.	N.	N.	0 18	2 50	Sunshine and clouds.
7 24 645	43	30	15	25	24 5	N.W.	N.W.	N.	0 14	1 75	Cloudy with snow-showers a.m. Clearing up p.m. Mod. breeze.
8 24 798	96	27 5	13	23	21	N.W.	N.W.	N.	0 32	8	Sunshine and clouds. Mod. breeze.
9 24 680	55	35	14	31 5	31	W.	W.	N.	0 99	5 50	Cloudy with gleams of sunshine.
10 24 744	57	38	23 5	35 5	35	N.W.	N.W.	N.	0 09	0 75	Cloudy till 11 a.m., then sunshine and clouds.
11 24 802	103	35	20	32	29 5	N.W.	N.W.	N.	—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
12 24 836	101	35 5	7	33	28 5	N.W.	N.W.	S.	—	—	Cloudless a.m. Sunshine and clouds p.m.
13 24 824	94	34 5	4	29 5	25	N.W.	N.W.	S.	0 19	2 75	Cloudy.
14 24 754	60	33	20 5	37	33	S.	S.	S.	0 16	4	Cloudy with snow-showers.
15 24 602	48	35	20	32	31 5	S.W.	S.W.	S.	—	—	Cloudless save some cirrus.
16 24 873	103	36	18	34	29 5	N.W.	N.W.	N.	0 03	0 50	Sunshine and clouds with slight showers of snow.
17 24 836	112	37 5	12 5	36 5	32 5	N.W.	N.W.	N.	0 03	0 75	Sunshine and clouds with slight showers of snow p.m.
18 24 709	60	30	8	30	25 5	W.	W.	N.	0 25	4 75	Cloudy. Snow-showers p.m. Strong breeze.
19 24 394	44	24	4	24	22	W.	W.	N.	—	—	Cloudless save some cumulus.
20 24 404	75	26 5	13	19	15	N.W.	N.W.	N.	—	—	Constant sunshine, but sky not cloudless.
21 24 406	85	23	0	18	15 5	N.W.	N.W.	N.	—	—	Cloudy with gleams of sunshine.
22 24 494	47	20 5	3	17	16	N.W.	N.W.	N.	—	—	Cloudy.
23 24 447	49	19	4	16	15	N.W.	N.W.	N.	0 22	3 75	Snow-showers p.m. Mod. breeze.
24 24 367	67	20	3	18 5	17	N.W.	N.W.	N.	0 06	0 75	Cloudy, slight snow-showers a.m. Sunshine and clouds 1 m.
25 24 534	44	17	11	16	15	N.W.	N.W.	N.	0 08	1 50	Cloudy. Snow-showers p.m. Mod. breeze.
26 24 372	44	20 5	3	19	18	N.W.	N.W.	N.	0 08	1 50	Sunshine and clouds. Mod. breeze.
27 24 371	67 5	0	7 5	6	5	W.	W.	N.	0 21	2 50	Cloudy with snow-showers.
28 24 316	38	8	17 5	4	3 5	O.	O.	N.	—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
29 24 472	68	10	9	5	3	N.	N.	N.	—	—	Cloudless.
30 24 580	84	12	12	0 5	8 5	N.	N.	N.	—	—	Cloudless.
31 24 745	93	22	8	18	16	O.	O.	N.	—	—	Cloudless.

JANUARY, 1888.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up	Cur			
1 24 609 96	30	-2	25	21 5			O.	N.W			Cloudless.
2 24 632 102	35	4 5	34	28			N.	S.			Cloudless save some cumulus.
3 25 852 89	33	15 5	32 5	30 5			W.				Cloudy. Gleams of sunshine at m.
4 24 962 101	39	12	31	26			O.	S.			Cloudless.
5 24 925 102 5	37	5 11	30	27			O.	S.			Cloudless.
6 25 051 88	36	12 31	28	27			O.	N.W			Sunshine and clouds.
7 25 130 105	39	13	35	32			N.				Cloudless.
8 25 337 68	35	20	34	32 5			N.	N.	0 38	4	Cloudy. Snow-showers p.m. Moderate breeze.
9 25 293 62	39	29	38	37			N.	N.	0 02		Sunshine and clouds. Moderate breeze.
10 25 283 108	38	31	37	33			N.				Almost constant sun. Sun sometimes obscured by cl'ds. M. breeze.
11 25 235 106	42	14	35	32			N.				Cloudless.
12 25 114 106	43	14 5	38 5	32 5			O.	N.			Cloudless.
13 25 049 102	30	15	25 5	23 5			O.	N.			Cloudless.
14 24 962 103	29	5-3	23	19			O.	N.			Cloudless.
15 24 927 94	28	5-4	24	18			O.	N.			Cloudless.
16 25 029 90	33	2	27	22			O.	N.			Cloudless.
17 25 070 97	32	3	26 5	22 5			O.	N.			Cloudless.
18 25 065 99	35	3	29	24			O.	N.			Cloudless.
19 25 150 103	36	5 3	30 5	25			O.	N.			Cloudless.
20 25 077 105	37	8	31	26 5			N.	N.			Cloudless a.m. Slight cirrus p.m.
21 25 058 158	37	5 4	32	26 5			N.	N.	0 45	7 75	Cloudy. Snow p.m.
22 24 676 94	39	10 5	36	33			W.				Cloudy, with gleams of sunshine. Moderate breeze.
23 24 937 50	33	5 28	32 5	32			N.	N.			Sunshine and clouds. Evening cloudless.
24 25 240 115	42	21	38	32 5			N.	N.			Cloudless save some cirrus.
25 25 193 109	43	2	36	32 5			N.	N.	0 34	9 25	Cloudless. Strong breeze p.m.
26 24 751 110	42	8 5	34 5	30 5			O.	N.	0 11	1 50	Cloudy with snow-showers. Strong breeze.
27 24 737 43	28	10	19 5	18 5			N.	N.	0 19	2 50	Cl'dy snow-srs a.m. Cl'ring up p.m. Evening cl'dy & snow. S. br.
28 24 351 102	21	4	15	13			W.	N.	0 19		Cloudy till 8 a.m., then clearing up. Evening cloudless. M. breeze.
29 24 452 90	19	7	14	12			N.	N.			Cloudless.
30 24 493 92	19	5-13	13	10 5			O.	N.			Moderate breeze.
31 24 356 100	18	-13	12 5	11			O.				Cloudless.

FEBRUARY, 1888.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wmd.		Amount of water	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val. wind.			
124 478	86	27	-15	16 5	15	O.	O.	N.	—	—	Cloudle.s.
224 716	95	30	1	26	22	W.	W.	N.	—	—	Almost constant sunshine; sun sometimes obscured by clouds.
324 855	105	33	1	28	23	O.	O.	N.	—	—	Cloudless.
424 983	89	32	9 5	30	26 5	W.	W.	N.	0 90	15 25	Sunshine and clouds a.m. Cloudy and snow p.m. Mod. breeze.
524 936	57	32	25	32	31	O.	O.	N.	0 33	8 75	Snow till 8 a.m., sunshine and clouds, with snow showers. Al. breeze.
624 759	47	31	25	30	29 5	S.W.	S.W.	N.	0 18	4 75	Snow. Moderate breeze.
724 832	50	29	5 20	28 5	27 5	W.	W.	N.	0 30	6 —	Snow. Moderate breeze.
824 631	52	28 5	23 5	28 5	27 5	W.	W.	N.	0 37	7 25	Snow. Moderate breeze.
924 610	43	25	19	24	23	N.W.	N.W.	N.	0 30	6 75	Cloudy till 9 a.m., then sunshine and cloud.
1024 741	108	36	20	33 5	30	W.	W.	N.	—	—	Cloudless, save some cirrus.
1124 626	115	36 5	10	35	32	W.	W.	N.	—	—	Cloudless, save some cirrus.
1224 625	118	42	8	36 5	31 5	W.	W.	N.	—	—	Cloudy. Snow p.m. Moderate breeze.
1324 667	53	33	25	33	32	S.	S.	N.	0 10	2 75	Almost constant sunshine; sun sometimes obscured by clouds
1424 739	96	37	4	36	32 5	S.	S.	N.	0 12	2 25	Snow. Moderate breeze.
1524 467	41	31	13	23	22 5	S.	S.	N.	0 44	8 —	Cloudy, with snow showers. Moderate breeze.
1624 362	40	21	5 16	20	19	S.	S.	N.	0 11	1 50	Cloudless, save some cumulus
1724 346	100	32	5	26	23	S.	S.	N.	—	—	Cloudless, save some cumulus. Moderate breeze.
1824 227	97	29	0	26 5	22 5	E.	E.	N.	—	—	Slightly cloudy.
1924 129	88	27	-4	25 5	23 5	O.	O.	S.	0 03	0 50	Constant sunshine, but sky not cloudless. High wind.
2024 220	112	40	5	38	32 5	S.	S.	N.	—	—	Sunshine and clouds. Moderate breeze.
2124 191	60	32	5 25	30	28	S.	S.	N.	—	—	Cloudless.
2224 366	104	31	0	29	23	O.	O.	N.	—	—	Cloudless, save some cirrus.
2324 435	102	32	5 3	27	22 5	S.	S.	N.	—	—	Almost constant sunshine; sun sometimes obscured by clouds.
2424 317	100	31	6	26 5	23 5	S.	S.	N.	—	—	Sunshine and clouds.
2524 562	89	36	4	28	26 5	S.	S.	N.	—	—	Constant sunshine, but sky not cloudless. Strong breeze.
2624 660	117	45	23	39	33	S.	S.	N.	—	—	Constant sunshine, but sky not cloudless. Moderate breeze.
2724 668	117	5	17	41	33 5	S.E.	S.E.	N.	—	—	Sunshine and clouds. Evening cloudy. Moderate breeze.
2824 676	102	38	12	35	32	E.	E.	N.	—	—	Misty till 8.30 a.m., cloudless save some cumulus. Mod. breeze.
2924 691	104	36	10	29	26	W.	W.	N.	—	—	

MARCH, 1888.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water.	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry Bulb.	Wet Bulb.	Up Curr.	Val. wind.			
1 24	600	117 5	30	3	27	25	N.	N.	—	—	Cloudy with gleams of sunshine. Moderate breeze.
2 24	630	99	34	-3	29	24	N.	N.	—	—	Cloudless till 8 a.m., then clouding over slightly. Mod. breeze.
3 24	446	110	31	5	29	25	N.	N.	0 10	1 25	Cloudless till 9 a.m., then clouding over slightly. Strong breeze.
4 24	505	95	21	8	16	14	N.W.	N.	0 23	3 75	Sunshine and clouds. Evening cloudless. Strong breeze.
5 24	545	42	15	8	14	14	N.W.	N.	0 23	3 50	Cloudy. Strong breeze.
6 24	859	112	32	8	29	24	O.	N.	—	—	Cloudless.
7 24	993	115	39	13	35	31	O.	N.	—	—	Cloudless.
8 24	937	122	49	5	42	36	O.	N.	—	—	Almost constant sunshine.
9 24	897	120	51	14	40	35	W.	S.	0 10	0 75	Cloudy, with snow showers. Moderate breeze.
10 24	637	58	41	28	36	35	W.	S.	0 09	2 —	Sunshine and clouds.
11 24	487	96	46	50	44	37	S.W.	S.	0 10	2 —	Sunshine and clouds.
12 24	356	122	41	21	38	30	W.	S.	0 47	6 50	Cloudy. Moderate breeze.
13 24	401	55	30	52	28	28	W.	S.	—	—	Sunshine and clouds.
14 24	432	114	41	16	41	32	S.W.	S.	0 13	1 25	Cloudless till 8 a.m., then sunshine and clouds.
15 24	357	118	48	20	42	36	S.	S.	0 03	0 50	Sunshine and clouds.
16 24	319	128	49	50	42	36	W.	N.	0 23	3 75	Sunshine and clouds.
17 24	304	47	34	52	30	29	N.W.	N.	0 06	1 50	Cloudy, with slight snow showers.
18 24	399	62	28	20	25	24	S.W.	N.	—	—	Sunshine and clouds.
19 24	368	120	35	12	33	27	S.	N.	—	—	Sunshine and clouds. Mod. breeze.
20 24	660	117	37	3	35	31	S.	N.	—	—	Cloudless.
21 24	740	117	46	5	42	33	O.	N.	—	—	Sunshine and clouds. Strong breeze.
22 24	648	113	37	16	34	31	O.	N.	—	—	Cloudless.
23 24	478	111	44	8	40	35	S.W.	S.	—	—	Sunshine and slight clouds. Mod. breeze.
24 24	532	119	46	12	44	36	S.	S.	—	—	Sunshine and clouds till 3 p.m., then cloudy. Strong breeze.
25 24	503	113	45	54	42	35	S.	S.	—	—	Sunshine and clouds. Mod. breeze.
26 24	449	106	47	32	36	34	S.	S.	—	—	Sunshine and clouds a.m. Cloudy p.m. Rain evening. M. breeze.
27 24	349	117	52	32	49	39	S.	S.	0 26	1 25	Cloudy, with showers of rain.
28 24	310	75	44	30	45	41	S.	S.	0 51	—	Sunshine and clouds, with slight snow showers. Strong breeze.
29 24	214	120	39	33	36	34	S.	S.	0 06	0 75	Sunshine and clouds, with snow showers.
30 24	447	101	42	16	39	32	S.	N.	0 01	0 50	Sunshine and clouds.
31 24	674	127	5	44	21	34	S.	N.	—	—	Sunshine and clouds.

APRIL, 1888.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water.	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val. wind			
1 24 766 123		43 5 19			38	33	S.	S.	—	—	Sunshine and clouds.
2 24 614 125		41 5 21			39 5	32	W.	S.	—	—	Sunshine and clouds. Slight breeze.
3 24 477 119		45 22 41			33	32	S.	S.	—	—	Sunshine and clouds. Slight breeze.
4 24 388 118		49 21 5			43	37	W.	N.	—	—	Sunshine and clouds. Slight breeze.
5 24 365 116		46 22 35			33 5	33 5	S.	N.	0 16	3 5	Nearly cloudless in the m'ning. Cloudy, snow-showers p.m. M. breeze.
6 24 577 122		32 21 29 5			29 5	25 5	S.	N.	0 05	1 25	Cloudy, gleams of sunshine and slight showers of snow. M. breeze.
7 24 611 62		38 13 27			27	25 5	S.	N.	0 01	—	Cloudy. Slight breeze.
8 24 546 125		38 0 35			32 5	32 5	S.	N.	—	—	Sunshine and clouds. Slight breeze.
9 24 596 122		40 18 36			33	33	S.	N.	0 26	4	Sunshine and clouds. Slight snow-showers p.m. Mod. breeze.
10 24 576 67		29 21 28			27	27	O.	N.	0 12	1 5	Cloudy and slight snow-showers. Slight breeze.
11 24 670 84		31 18 30			29 5	29 5	O.	N.	0 13	2 5	Cloudy and slight snow-showers. Slight breeze.
12 24 523 72		29 9 29			27	27	O.	N.	0 37	5 25	Cloudy and snow-showers. Mod. breeze.
13 24 770 138		37 5 18 35			32 5	32 5	W.	N.	0 02	0 25	Sunshine and clouds a.m. Cloudy p.m. Slight breeze.
14 24 999 127		54 26 5			47 5	41	O.	N.	—	—	Cloudless.
15 24 760 125		59 24 55			43	43	O.	N.	—	—	Cloudless.
16 24 831 120		57 25 49			41	41	O.	N.	—	—	Cloudless.
17 24 855 121		60 27 53			44	44	O.	N.	—	—	Cloudless.
18 24 849 127		54 26 40			41 5	41 5	W.	N.	0 01	—	Sunshine and clouds. Slight breeze.
19 24 654 106		51 32 48 5			40 5	40 5	S.	N.	0 15	1 5	Sunshine and clouds. Slight snow-showers p.m. Slight breeze.
20 24 534 54		41 31 33			32	32	S.	N.	0 66	5 5	Cloudy and snow-showers. Slight breeze.
21 24 584 86		35 5 28 32			29	29	N.W.	N.	0 02	0 25	Cloudy. Slight showers of snow a.m.
22 24 605 120		47 12 46			40	40	S.W.	S.	—	—	Sunshine and clouds. Slight breeze.
23 24 746 116		51 33 47 5			40 5	40 5	S.	S.	—	—	Sunshine and clouds. Slight breeze.
24 24 717 123		60 5 34 55			43	43	S.	S.	0 02	—	Almost constant sunshine. Mod. breeze.
25 24 639 97		53 34 5 49			44	44	S.W.	S.	0 52	—	Cloudy with gleams of sunshine and slight showers of rain.
26 24 542 64		43 30 36 35 5			35 5	35 5	O.	N.	0 18	—	Cloudy and snow-showers. Slight breeze.
27 24 806 120		44 5 28 5 41			37	37	N.W.	N.	0 19	2 5	Sunshine and clouds. Slight snow-showers p.m. Mod. breeze.
28 24 926 73		60 31 38 5			36	36	N.W.	N.	0 04	—	Cloudy and slight rain. Mod. breeze.
29 24 939 123		58 27 56 46			46	46	W.	N.	—	—	Cloudless a.m. Cloudless save some cirrus p.m.
30 24 831 120		58 5 31 54			44	44	S.	S.	—	—	Sunshine and clouds.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water.	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up	Cur			
1 24 706 116		916	54	38 5	49 5	43 5	S.W.	S.	—	—	Sunshine and clouds. Mod. breeze.
2 24 964 126			62	35 5	57 5	48	S.W.	N.	—	—	Constant sunshine, but sky not cloudless. Slight breeze.
3 24 687 121			62	529	58	47 5	S.W.	N.	—	—	Cloudless a.m. Almost cloudless p.m. Slight breeze.
4 25 033 82			46	33 5	42	38 5	S.W.	N.	0 09	0 5	Cloudy. A little snow in the evening.
5 25 070 125			50	29	48	39 5	O.	N.	—	—	Sunshine and clouds. Slight breeze.
6 25 125 113			54	29 5	50	42	O.	N.	—	—	Cloudless. Slight breeze.
7 25 168 122			64	26 5	59	46	O.	N.	—	—	Cloudless. Slight breeze.
8 25 139 124			67	30 5	63	49	O.	N.	—	—	Cloudless. Slight breeze.
9 25 061 128			66	33 5	61	47 5	W.	N.	0 24	—	Almost cloudless. Slight breeze.
10 24 974 123			61	37	58 5	50 5	W.	N.	0 04	—	Sunshine and clouds. Cloudless in the evening.
11 24 957 116			50	35 5	45	41 5	W.	N.	—	—	Sunshine and clouds. Cloudless.
12 25 012 113		5	55	25	52	40	N.	N.	—	—	Cloudless. Slight breeze.
13 25 008 119			62	26	56	47	N.W.	N.	—	—	Cloudless a.m. Almost cloudless p.m.
14 24 765 122			59	30	56	46	N.W.	S.	—	—	Sunshine and clouds. Slight breeze.
15 24 750 119			58	39	55 5	46	S.W.	S.	—	—	Almost constant sunshine. Slight breeze.
16 24 867 116			62	35 5	56 5	43 5	S.	N.	—	—	Cloudless a.m. Almost cloudless p.m. Slight breeze.
17 24 970 122		5	66	38 5	61	49	O.	N.	—	—	Cloudless.
18 24 886 128			69	35	67	52	O.	N.	—	—	Cloudless.
19 24 960 126			60	536	65	49 5	O.	N.	—	—	Almost constant sunshine. Mod. breeze.
20 25 019 127			68	536	66	51	N.W.	N.	—	—	Sunshine and clouds. Slight rain in the evening.
21 25 013 126			63	537	59	51 5	N.W.	N.	0 06	—	Sunshine and clouds. Slight breeze.
22 24 904 132			68	543	65	54	N.	N.	—	—	Sunshine and clouds. Slight breeze.
23 24 927 125		5	68	35	63	50	N.	N.	—	—	Almost constant sunshine. Slight breeze.
24 24 958 124			63	533	60	48	N.	N.	—	—	Almost constant sunshine. Mod. breeze.
25 24 908 122			61	31 5	62 5	47 5	N.	N.	0 06	—	Constant sunshine, but sky not cloudless. Slight breeze.
26 24 768 117			61	35 5	59	48	N.W.	S.	—	—	Sunshine and clouds. Mod. breeze.
27 24 716 123			64	532	62	47	S.	N.	0 02	—	Constant sunshine, but sky not cloudless. Slight breeze.
28 24 717 112			61	37	58 5	45	S.	N.	0 03	—	Cloudless in the morning, then clouds gathering. Evening cloudy.
29 24 739 124			62	38	55	47 5	N.E.	N.	—	—	Cloudy with slight showers of rain. Slight breeze.
30 24 937 124			62	38	55	47 5	N.	N.	—	—	Sunshine and clouds. Slight breeze.
31 24 976 115			62	537	57 5	50	W.	N.	0 17	—	Cloudy with gleams of sunshine. Mod. breeze.

JUNE, 1888.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in	Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up. Cur.	Val. wind.				
1 25	106 103	56	54	54	52	49	N.W.	N.	0	01	—	Cloudy, gleams of sunshine, and slight showers rain. Mod. breeze.
2 25	149 124	5	71	32	70	53	O.	N.	—	—	—	Cloudless. Slight breeze.
3 25	128 127	77	537	72	5	52	O.	N.	—	—	—	Cloudless.
4 25	085 134	83	43	5	79	57	O.	N.	—	—	—	Cloudless.
5 25	009 130	79	42	5	77	56	O.	S.	—	—	—	Cloudless.
6 24	957 129	78	43	5	75	54	O.W.	S.	0	82	—	Cloudless.
7 25	014 94	62	54	47	46	46	S.	S.	0	11	—	Sunshine and clouds with slight showers of rain.
8 24	918 126	5	71	36	68	54	S.	N.	0	11	—	Cloudless a.m.; sunshine, clouds p.m. Slight rain even. M. breeze
9 24	830 126	68	49	64	53	49	N.W.	N.	0	1	—	Sunshine and clouds. Slight shower rain evening. Mod. breeze.
10 24	975 91	55	45	54	49	51	S.W.	N.	—	—	—	Cloudy, with slight showers of rain. Moderate breeze.
11 24	991 122	66	54	5	50	51	W.	S.	—	—	—	Cloudless a.m. Sunshine and clouds p.m.
12 24	912 129	5	71	38	63	50	S.	S.	—	—	—	Almost constant sunshine.
13 24	869 134	5	74	39	5	54	S.E.	N.	0	74	—	Cloudy with gleams of sunshine and slight showers of rain p.m.
14 24	840 92	61	544	59	5	51	N.W.	N.	0	01	—	Sunshine and clouds.
15 24	889 113	50	536	46	41	48	S.W.	S.	0	22	—	Cloudless save some cumulus. Strong breeze.
16 24	708 118	5	62	527	61	48	S.W.	N.	0	73	—	Cloudy, with showers of rain. Slight breeze.
17 24	756 52	52	30	40	39	40	N.W.	N.	0	13	—	Sunshine and clouds, with slight showers of rain p.m. Mod. breeze
18 24	820 117	62	33	47	5	43	S.	N.	0	01	—	Cloudy in morning, then clearing up. Almost cloudless evening.
19 24	868 72	48	36	5	42	5	S.	N.	—	—	—	Sunshine and clouds.
20 24	803 117	62	31	57	5	48	W.	N.	—	—	—	Sunshine and clouds.
21 24	860 130	67	40	62	5	50	S.E.	S.	—	—	—	Cloudy, with gleams of sunshine.
22 24	930 121	66	38	5	62	51	S.E.	S.	—	—	—	Sunshine and clouds.
23 24	996 128	69	45	66	53	55	S.E.	S.	—	—	—	Cloudless a.m. Sunshine and clouds p.m.
24 25	015 125	5	72	540	68	55	S.	S.	0	1	—	Almost constant sunshine. Cloudy and rain in the evening.
25 24	994 129	74	42	5	69	54	S.	S.	0	33	—	Sunshine and clouds. Rain in the evening.
26 24	983 112	65	543	57	5	51	W.	S.	0	02	—	Cloudy, with gleams of sunshine.
27 24	892 110	61	47	50	5	47	N.E.	N.	0	36	—	Cloudy, with gleams of sunshine.
28 24	771 86	58	38	55	50	5	S.W.	N.	0	73	—	Cloudy, with gleams of sunshine.
29 24	691 105	5	54	39	51	47	W.	S.	0	24	—	Cloudy, with showers rain. Clearing in evening. Slight breeze.
30 24	611 56	40	36	44	5	43						

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water.	Snow in.	Eng. Ins.	GENERAL DESCRIPTION.
					Dry Bulb	Wet Bulb	Up Cur.	Val. wind.				
1 24	853.92		48.53	46	44	44	W.	N.	0.51	—	—	Cloudy, with gleams of sunshine and showers of rain.
2 24	896.114		56.33	51	45	45	N.W.	N.	0.02	—	—	Almost cloudless. Evening cloudless.
3 24	819.123	5	62.534	67	53	5	S.W.	S.	0.32	—	—	Sunshine and clouds.
4 24	877.108		53.543	52	48		S.W.	N.	0.35	—	—	Cloudy, with slight showers of rain.
5 24	877.108		61.42	5	55	5	W.	N.	0.17	—	—	Cloudy, with gleams of sunshine and slight showers of rain.
6 24	793.130		66.545	63	56	5	W.	S.	0.2	—	—	Sunshine and clouds. Mod. breeze.
7 24	899.123		59.42	57	53		S.W.	N.	0.4	—	—	Cloudy, with gleams of sunshine and slight showers of rain.
8 24	911.124		58.541	55	50		N.W.	N.	0.03	—	—	Sunshine and clouds, with slight showers of rain.
9 24	982.93		51.42	47	5	43	S.	N.	0.09	—	—	Cloudy, with gleams of sunshine and slight showers of rain.
10 24	877.121		61.35	58	5	51	N.	N.	—	—	—	Sunshine and clouds. Mod. breeze.
11 24	699.119		61.536	59	49		S.W.	S.	0.12	—	—	Sunshine and clouds.
12 24	905.114		53.32	5	49	43	W.	N.	—	—	—	Almost constant sunshine. Strong breeze.
13 24	942.98	5	50.35	48	41	5	W.	N.	0.05	—	—	Cloudy, gleams of sunshine, and slight showers of rain. M. breeze.
14 24	945.109		61.32	54	5		W.	N.	—	—	—	Sunshine and clouds. Evening cloudless.
15 24	810.126		72.36	70	54	5	S.	S.	0.01	—	—	Cloudless a.m. Slight cyrrhus p.m.
16 24	602.128		75.41	73	57		S.	S.	0.58	—	—	Sunshine and clouds, with slight showers of rain. Strong breeze.
17 24	604.120		63.44	60	49	5	W.	S.	0.42	—	—	Sunshine and clouds. Evening slight rain.
18 24	633.122		53.35	49	5		W.	S.	0.33	—	—	Sunshine and clouds, with showers of rain.
19 24	758.123		59.40	55	49		N.W.	S.	0.11	—	—	Sunshine and clouds, with slight showers of rain. Mod. breeze.
20 24	943.112		55.41	5	46		W.	S.	0.04	—	—	Sunshine and clouds, with slight showers of rain. Mod. breeze.
21 25	011.124		67.539	61	51	5	W.	N.	0.02	—	—	Cloudy, gleams of sunshine, and slight showers of rain. Sl. breeze.
22 25	032.131		71.546	69	54		S.W.	S.	—	—	—	Almost constant sunshine.
23 24	952.123		72.42	69	5	54	W.	N.	0.23	—	—	Constant sunshine, but sky not cloudless.
24 24	991.126		68.43	63	57	5	O.	S.	0.04	—	—	Cloudless a.m. Sunshine and clouds p.m. Slight rain evening.
25 25	028.130	5	75.41	74	57	5	S.	N.	0.11	—	—	Sunshine and clouds.
26 24	988.118	5	67.47	55	50		S.W.	S. am. N. p.m.	0.5	—	—	Thunderstorm in the morning, then sunshine and clouds.
27 24	935.130		77.49	5	70	55	S.	N.	—	—	—	Sunshine and clouds. Moderate breeze.
28 24	804.123		63.49	59	55	5	S.W.	N.	0.01	—	—	Sunshine and clouds. Moderate breeze.
29 24	847.122		64.35	5	52	5	S.W.	N.	—	—	—	Sunshine and clouds. Moderate breeze.
30 24	820.129		73.45	70	55		O.	S.	0.05	—	—	Almost cloudless a.m. Sun. and e'ds p.m. Even. cloudy. Sl. breeze.
31 24	938.172		61.548	5	57		N.	N.	0.03	—	—	Cloudy.

AUGUST, 1888.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water in	Snow in	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val. wind.			
1 25 006 72	52	35	39	40	39	S. N.	S.	S.	0 78	—	Cloudy and rain till 6 p.m., then clearing up. Evening cloudless.
2 24 821 70	49	38	43	44	43	N.	N.	N.	0 88	—	Cloudy with rain and snow. Mod. breeze.
3 25 075 64	45	33	41	44	41	W.	W.	N.	0 05	—	Cloudy with gleams of sunshine and slight showers of rain.
4 24 075 124	64	35	48	59	48	S.W.	S.W.	N.	—	—	Almost constant sunshine. Slight breeze.
5 24 826 97	56	34	50	34	50	S.	S.	S.	0 54	—	Sun. and cl'ds early in the morning, then cl'dy and showers of rain.
6 24 956 102	46	35	46	35	46	W.	W.	N.	0 18	—	Cloudy with gleams of sunshine and showers of rain and snow.
7 25 050 110	49	34	46	48	46	W.	W.	N.	0 28	—	Sunshine and clouds.
8 25 176 119	61	37	59	46	59	N.W.	N.W.	N.	—	—	Constant sunshine, but sky not cloudless.
9 25 218 125	73	32	69	32	69	N.W.	N.W.	N.	—	—	Cloudless save some cumulus.
10 25 244 129	78	51	74	59	59	O.	O.	N.	—	—	Cloudless. Slight breeze.
11 25 220 132	80	42	78	60	78	O.	O.	N.	—	—	Cloudless. Slight breeze.
12 25 133 134	83	46	79	57	79	O.	O.	N.	—	—	Cloudless. Slight breeze.
13 25 114 135	82	45	80	62	80	O.	O.	N.	—	—	Cloudless save some cumulus. Mod. breeze.
14 25 152 131	79	46	76	63	76	O.	O.	N.	—	—	Constant sunshine, but sky not cloudless. Slight breeze.
15 25 024 130	81	48	80	58	80	S.	S.	S.	0 09	—	Almost constant sunshine. Mod. breeze.
16 24 931 127	70	46	69	59	69	W.	W.	S.	—	—	Cloudy with showers of rain.
17 24 844 86	65	43	57	51	57	S.	S.	S. a.m. N. p.m.	0 46	—	Cloudy with gleams of sunshine and showers of rain.
18 24 852 109	55	44	51	46	51	N.W.	N.W.	N.	0 13	—	Sunshine and clouds. Evening cloudless. Slight breeze.
19 25 027 127	59	37	51	49	49	W.	W.	N.	—	—	Cloudless save some cirrus a.m. Sunshine and clouds p.m.
20 24 981 131	68	30	66	50	66	S.W.	S.W.	N.	—	—	Sunshine and clouds a.m. Slight rain p.m.
21 24 920 121	65	44	60	51	60	S.	S.	N.	0 1	—	Cloudy and rain.
22 24 866 99	52	40	45	54	45	S.	S.	N.	0 8	—	Sunshine and clouds a.m. Cloudless p.m.
23 25 018 121	61	41	59	48	59	N.	N.	S.	—	—	Cloudless.
24 24 069 125	73	35	71	54	71	O.	O.	S.	—	—	Cloudless. Evening slight rain.
25 24 809 125	73	54	72	55	72	O.	O.	S.	0 11	—	Cloudy with gleams of sunshine and slight showers of rain.
26 24 942 108	59	44	55	52	55	N.W.	N.W.	N.	0 07	—	Sunshine and clouds.
27 25 011 126	65	49	59	57	59	W.	W.	N.	—	—	Mod. breeze.
28 25 008 128	69	51	66	59	66	S.E.	S.E.	N.	—	—	Sunshine and clouds. Mod. breeze.
29 24 995 130	70	43	66	55	66	S.W.	S.W.	N.	—	—	Sunshine and clouds. Mod. breeze.
30 25 005 105	59	46	57	53	57	S.	S.	N.	0 51	—	Sunshine and clouds a.m. Cloudy with showers of rain p.m.
31 25 088 80	53	44	49	47	49	S.W.	S.W.	S. a.m. S. p.m.	—	—	Cloudy and rain.

SEPTEMBER, 1888.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water.	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val. wind.			
1 24 958	61		49	41	45	43	N.W.	N.	0 44	1 25	Cloudy with rain and snow. Slight breeze.
2 24 918	52		39	53 5	35	37	O.	N.	0 32	—	Snow.
3 24 938	118		61	33	55	44	S.	S. a.m.	—	—	Constant sunshine, but sky not cloudless.
4 25 027	124		62	35	59	48	S.W.	S.	—	—	Sunshine and clouds. Slight breeze.
5 25 178	130		72	39	60	55	S.E.	N.	—	—	Constant sunshine, but sky not cloudless.
6 25 159	132		79	38	68	54	S.W.	S.	0 03	—	Sunshine and clouds. Slight shower of rain p.m.
7 25 041	116		62	41	60	55	S.E.	S. a.m.	—	—	Cloudy with gleams of sunshine and showers of rain. Mod. breeze.
8 24 959	66		49	40	43	42	N.W.	N.	1 43	1 25	Cloudy with rain and snow. Mod. breeze.
9 24 934	65		54	34	46	45	O.	S.	1 35	—	Rain all day. Some gleams of sunshine a.m.
10 25 108	107		57	32	51	48	S.E.	S.	1 12	—	Almost constant rain. Strong breeze a.m. Mod. breeze p.m.
11 25 174	75		51	44	48	46 5	O.	N.	0 6	—	Sunshine and clouds till 5 p.m., then mist. Mod. breeze.
12 25 250	124	5	62	54 2	61 5	54	S.	N.	0 01	—	Cloudless 9 a.m., sun sometimes obscured by cl'ds. Slight rain p.m.
13 25 241	127		70	41	66	60	S.W.	N.	—	—	Sunshine and clouds. Mod. breeze.
14 25 180	126		76	44	68	60	W.	N.	—	—	Sunshine and clouds. Mod. breeze.
15 25 126	132		71	39	69	58	S.W.	N.	0 25	—	Cloudless till 8 a.m., then sunshine and clouds. Mod. breeze.
16 25 054	128		70	40	67	55	N.W.	N.	0 08	—	Cloudy and rain. Mod. breeze.
17 24 927	82		59	43	58	50	N.E.	N.	—	—	Almost constant sunshine.
18 24 935	125		65	42	62	55	E.	N.	—	—	Constant sunshine, but sky not cloudless. Mod. breeze.
19 25 003	124		66	32	65	54	N.E.	N.	—	—	Constant sunshine a.m. Sun. and cl'ds p.m. Evening cloudless.
20 25 000	125		67	32	65 5	53	S.E.	N.	—	—	Almost cloudless a.m. Sunshine and clouds p.m.
21 25 079	127		68	36	64	52	S.E.	N.	—	—	Cloudless a.m. Sunshine and clouds p.m. Strong breeze.
22 25 107	122		66	32	65	57	S.	S.	—	—	Almost constant sunshine.
23 25 108	124		67	36 5	65	51	S.E.	N.	0 65	—	Sunshine till 2.30 p.m., then cloudy.
24 24 926	130	5	71	40	69	56	S.E.	N.	0 05	—	Rain a.m. Cloudy p.m.
25 24 885	58		57	41	48	46	N.E.	N.	—	—	Sun. and cl'ds a.m. Cloudy with slight showers of rain p.m.
26 25 028	126		61	39	57	50	S.W.	N.	—	—	Sunshine and clouds.
27 25 023	79		54	41	53	47 5	N.	N.	—	—	Almost constant sunshine. Evening cloudless. Mod. breeze.
28 24 989	125		63	36	60	48 5	W.	N.	—	—	Cl'dless save some cirrus a.m. Sun. and cl'ds p.m. Slight breeze.
29 24 875	127		64	31 5	62	49 5	N.	N.	0 22	—	Cloudy with gleams of sunshine and showers of rain.
30 24 590	109		54	39	54	50	S.E. a.m. N.W. p.m.	N.	—	—	

OCTOBER, 1888.

Date.	Barom.	Solar radiation	Max.	Min.	Hygrometer.		Wind.		Amount of water.	Snow in.	Eng. Ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up. Cur.	Dir. Wind.				
1 24	572	116	53	34	52	5	W.	N.	—	—	—	Almost constant sunshine. Moderate breeze. [rain. M. breeze.
2 24	421	96	62	36	60	50	S.	S.	0 55	2	—	Sunshine and clouds till 9.30 a.m., then cloudy, with heavy showers
3 24	489	60	52	47	52	51	S.	N.	1 2	—	—	Rain and snow.
4 24	683	120	50	32	47	45	S.W.	N.	—	6 5	—	Snow till 9 a.m., then sunshine and clouds.
5 24	646	114	45	34	44	45	S.E.	N.	0 3	—	—	Snow till 10.30 a.m., then clearing up, constant sunshine p.m. Evening cloudless.
6 24	762	124	41	28	35	33	S.	N.	—	6 15	—	Snow till 9.30 a.m., then sunshine and clouds. Evening cloudless.
7 24	683	92	35	25	30	30	N.	N.	0 32	—	—	Snow, with gleams of sunshine. Moderate breeze.
8 24	625	95	33	24	32	5	N.a.m.	N.	0 1	—	—	Cloudy and snow showers a.m. Sunshine and clouds p.m.
9 24	559	72	34	23	34	31	S.E.p.m.	N.	—	—	—	Cloudy.
10 24	775	72	35	27	34	32	N.W.	N.	—	—	—	Cloudy.
11 24	947	118	49	50	46	41	S.W.	N.	—	—	—	Sunshine and clouds.
12 24	948	113	48	24	45	38	N.W.	N.	—	—	—	Almost constant sunshine.
13 24	726	73	44	21	40	34	N.E.	N.	0 15	2	—	Cloudy, with gleams of sunshine.
14 24	656	97	39	26	5	31	N.	N.	—	—	—	Cloudy, with slight snow showers and gleams of sunshine.
15 24	984	110	41	21	5	40	N.	N.	—	—	—	Almost constant sunshine.
16 25	092	114	54	27	5	42	O.	N.a.m.	—	—	—	Cloudless.
17 24	954	117	52	25	51	44	S.W.	N.a.m.	—	—	—	Cloudless a.m. Sunshine and clouds p.m.
18 24	903	116	57	23	52	45	O.	N.	—	—	—	Cloudless.
19 24	980	105	45	21	40	37	O.	N.	—	—	—	Cloudless, save some cumulus.
20 25	069	104	45	515	40	36	O.	N.	—	—	—	Cloudless.
21 25	119	117	54	20	49	39	O.	N.	—	—	—	Cloudless.
22 25	070	120	56	22	55	43	O.	N.	—	—	—	Cloudless.
23 25	092	114	58	23	56	46	O.	N.	—	—	—	Cloudless.
24 25	084	121	60	24	56	46	O.	S.	—	—	—	Cloudless, save some cirrus.
25 25	104	119	57	25	54	46	O.	N.	—	—	—	Cloudless.
26 25	228	116	55	24	52	45	O.	N.	—	—	—	Slight breeze.
27 25	201	114	56	24	53	44	O.	N.	—	—	—	Cloudless.
28 25	339	119	63	25	56	47	O.	N.	—	—	—	Cloudless.
29 25	240	115	61	28	60	50	O.	S.	—	—	—	Cloudless, save some cirrus.
30 25	124	120	65	20	60	52	O.	N.	—	—	—	Cloudless.
31 25	020	121	66	128	65	55	O.	N.	—	—	—	Slight breeze.

NOVEMBER, 1888.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val wind			
1 24 719 110	65	28	53	47	O.	S.			—	—	Cloudless. Slight breeze.
2 24 451 121	58	35	56	43	N.W.	S.			0 3	2 5	Almost constant sunshine. Slight breeze.
3 24 559 57	47	30	32	31	N.	N.			0 35	6	Snow. Slight breeze.
4 24 825 52	34	29	33	36	N.	N.			—	—	Cloudy. Snow till 9 a.m.
5 24 774 118	43	14	41	37	W.	N.			—	—	Sunshine and clouds.
6 24 774 97	46	18	43	37	S.W.	N.			0 17	1 5	Cloudy, with snow showers and gleams of sunshine.
7 24 556 49	37	28	35	33	S.W.	N.			0 15	1 25	Cloudy, with snow showers.
8 24 830 119	45	28	45	40	N.	N.			—	—	Sunshine and clouds.
9 24 677 96	46	21	44	38	N.E.	N.			—	—	Almost constant sunshine.
10 24 636 110	45	23	43	38	S.W.	N.			—	—	Sunshine and clouds.
11 24 999 110	43	15	37	31	W.	N.			—	—	Cloudless save some cumulus.
12 24 819 60	45	15	41	35	S.E.	N.			—	—	Cloudy.
13 24 720 101	46	27	44	39	S.W.	N.			—	—	Sunshine and clouds.
14 24 878 83	46	53	45	41	S.	N.			—	—	Cloudy with gleams of sunshine.
15 25 180 111	53	28	49	44	O.	N.			—	—	Cloudless.
16 25 228 107	54	28	50	42	O.	N.			—	—	Cloudless, save some cirrus.
17 25 075 112	53	26	51	43	O.	N.			—	—	Cloudless.
18 24 944 95	40	25	38	36	N.W.	N.			—	—	Sunshine and clouds. Mod. breeze.
19 25 027 106	46	27	44	37	N.	N.			—	—	Almost constant sunshine. Evening cloudless.
20 24 799 110	50	52	49	40	O.	N.			—	—	Cloudless.
21 24 907 81	39	20	26	21	N.W.	N.			0 35	12	Sunshine and clouds till 9 30 a.m., then snow.
22 25 130 45	27	22	27	25	O.	N.			0 49	6	Snow.
23 25 267 54	33	25	32	32	O.	N.			—	—	Cloudy and misty.
24 25 230 104	40	11	37	37	O.	N.			—	—	Cloudless, save some cumulus.
25 25 080 114	47	12	41	37	O.	N.			—	—	Cloudless, save some cirrus.
26 24 877 119	47	5	42	35	O.	N.			—	—	Cloudless.
27 24 810 113	46	16	43	36	O.	N.			—	—	Sunshine till 2 p.m., then cloudy.
28 24 624 110	45	21	45	37	S.	S.			—	—	Cloudy with gleams of sunshine.
29 24 478 121	51	34	43	36	S.	S.			0 4	6	Sunshine and clouds.
30 24 621 110	40	26	42	31	S.	N.			—	—	Moderate breeze.

DECEMBER, 1888.

Time.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in.	Fog. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up. Cur.	Val. wind.				
1 24 725	52	34	.8	32	31	N.	N.	S.	—	0 75	—	Cloudy, with slight showers of snow.
2 25 070	108	36	25	31	31	O.	O.	N.	—	—	—	Cloudless.
3 25 008	110	41	11	37	36	O.	O.	N.	—	—	—	Cloudless.
4 25 126	110	5	43	38	32	O.	O.	N.	—	—	—	Cloudless.
5 25 135	107	45	11	41	36	O.	O.	N.	—	—	—	Cloudless.
6 25 091	108	45	16	42	34	O.	O.	N.	—	—	—	Cloudless.
7 25 067	107	45	12	40	35	O.	O.	N.	—	—	—	Cloudless.
8 25 157	105	41	16	39	33	O.	O.	N.	—	—	—	Cloudless.
9 25 070	104	41	5	36	32	O.	O.	N.	—	—	—	Cloudless.
10 24 894	91	39	15	38	34	W.	W.	N.	—	—	—	Cloudy, with gleams of sunshine. Moderate breeze.
11 24 924	96	32	13	22	21	N.W.	N.	N.	—	—	—	Cloudless, save some cumulus.
12 24 978	98	33	1	18	13	O.	O.	N.	—	—	—	Cloudless.
13 25 101	97	34	0	34	32	O.	O.	N.	—	—	—	Cloudless.
14 25 162	99	35	8	34	24	O.	O.	N.	—	—	—	Cloudless.
15 25 047	100	38	9	37	28	O.	O.	N.	—	—	—	Cloudless.
16 25 071	99	39	10	36	33	O.	O.	N.	—	—	—	Cloudless.
17 25 115	102	41	13	34	29	O.	O.	N.	—	—	—	Cloudless.
18 25 032	97	47	15	44	33	S.E.	N.	N.	—	—	—	Cloudless a.m. Sun sometimes obscured by clouds p.m.
19 25 028	96	45	18	41	35	S.W.	N.	N.	—	—	—	Cloudy, with gleams of sunshine. Moderate breeze.
20 24 687	46	46	23	40	34	S.	S.	S.	—	—	—	Sunshine and clouds.
21 24 602	89	42	20	39	33	S.	S.	S.	—	—	—	Sunshine and clouds.
22 24 406	110	47	19	5	37	S.	S.	S.	—	—	—	Evening cloudless.
23 24 605	90	49	28	45	36	O.	O.	S.	—	—	—	Cloudless.
24 24 795	103	45	20	38	34	S.	S.	N.	—	—	—	Almost constant sunshine
25 24 801	100	44	18	39	34	S.W.	N.	N.	—	—	—	Sunshine and clouds.
26 24 698	102	45	20	42	35	S.W.	N.	N.	—	—	—	Sunshine and clouds.
27 24 906	94	37	20	5	34	S.W.	N.	N.	—	—	—	Sunshine and clouds.
28 24 768	93	38	14	38	32	S.W.	N.	S.	—	—	—	Almost constant sunshine.
29 24 730	105	43	15	41	36	S.W.	N.	S.	—	—	—	Moderate breeze.
30 24 820	108	45	18	42	35	S.W.	N.	N.	—	—	—	Almost constant sunshine.
31 24 816	102	46	20	5	43	S.W.	N.	N.	—	—	—	Constant sunshine, but sky not cloudless.

JANUARY, 1889.

Date.	Barom.	Solar radiation	Max.	Min.	Hygrometer		Wind.		Amount of water.	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry Bulb.	Wet Bulb.	Up Cur.	Val. wind.			
1 24 305 105	46	22	39	36	N.	O.	N.	Cloudless, save some cumulus.	—	—	Cloudless.
2 24 727 100	37	14	35	27	N.	O.	N.	Cloudless.	—	—	Cloudless.
3 25 091 90	25	2	23	17	N.	O.	N.	Sunshine and clouds. Strong wind. Evening cloudless.	—	—	Sunshine and clouds. Strong wind. Evening cloudless.
4 25 008 82	24	1	22	16	N.	N.W.	N.	Cloudless.	—	—	Cloudless.
5 24 995 98	37	3	31	25	N.	O.	N.	Cloudless.	—	—	Cloudless.
6 24 918 96	36	4	33	31	N.	O.	N.	Cloudless.	—	—	Cloudless.
7 24 948 102	42	7	39	30	N.	O.	N.	Snow till 10 a.m., then sunshine and clouds. Evening cloudless.	—	—	Snow till 10 a.m., then sunshine and clouds. Evening cloudless.
8 24 826 108	41	13	38	30	N.	W.	N.	Cloudless.	—	—	Cloudless.
9 24 696 99	39	12	36	30	N.	O.	N.	Cloudy, some gleams of sunshine a.m.	—	—	Cloudy, some gleams of sunshine a.m.
10 24 431 65	34	13	33	30	N.	S.	N.	Sunshine and clouds a.m., cloudless p.m.	0 75	—	Sunshine and clouds a.m., cloudless p.m.
11 24 426 66	31	17	28	25	N.	N.	N.	Almost constant sunshine.	—	—	Almost constant sunshine.
12 24 318 110	41	12	35	32	N.a.m.	S.W.	N.a.m.	Cloudless.	—	—	Cloudless.
13 24 484 97	37	16	32	20	S.p.m.	O.	N.	Cloudless, save some cirrus.	—	—	Cloudless, save some cirrus.
14 24 676 95	33	9	30	30	N.	O.	N.	Cloudless.	—	—	Cloudless.
15 24 689 92	32	3	27	23	N.	O.	N.	Cloudless.	—	—	Cloudless.
16 24 732 95	34	7	33	30	N.	O.	N.	Cloudless.	—	—	Cloudless.
17 24 906 106	45	9	34	30	N.	O.	N.	Cloudless.	—	—	Cloudless.
18 25 131 100	48	15	38	31	N.	O.	N.	Sunshine and clouds.	—	—	Sunshine and clouds.
19 25 006 102	47	14	39	33	N.	W.	N.	Sunshine and clouds till 3 p.m., then snow.	—	—	Sunshine and clouds till 3 p.m., then snow.
20 24 785 103	34	19	32	28	N.a.m.	N.W.	N.a.m.	Cloudy, with snow.	2	—	Cloudy, with snow.
21 24 735 30	25	20	25	24	S.p.m.	O.	N.	Sunshine and clouds. Mod. breeze.	1 25	—	Sunshine and clouds. Mod. breeze.
22 24 717 90	24	5	23	23	N.	N.	N.	Cloudless, save some cumulus. Moderate breeze.	—	—	Cloudless, save some cumulus. Moderate breeze.
23 24 833 99	19	-1	12	12	N.	N.E.	N.	Cloudless.	—	—	Cloudless.
24 24 883 108	29	7	24	21	N.	O.	N.	Cloudless.	—	—	Cloudless.
25 24 999 110	35	7	5	32	N.	O.	N.	Cloudless.	—	—	Cloudless.
26 25 057 110	42	6	36	30	N.	O.	N.	Cloudy, with snow.	—	—	Cloudy, with snow.
27 25 116 146	28	5	11	25	N.	O.	N.	Cloudless, save some cumulus.	2 5	—	Cloudless, save some cumulus.
28 25 275 105	36	-2	5	34	N.	O.	N.	Cloudless a.m. Sunshine and clouds p.m.	—	—	Cloudless a.m. Sunshine and clouds p.m.
29 25 073 96	42	7	36	29	N.	W.	N.	Sunshine and clouds a.m. Cloudy p.m.	—	—	Sunshine and clouds a.m. Cloudy p.m.
30 24 871 71	38	9	37	30	N.	S.W.	N.	Snow till 10 a.m., then clearing up. Gleams of sunshine p.m.	0 17	5 25	Snow till 10 a.m., then clearing up. Gleams of sunshine p.m.
31 24 997 70	35	12	35	33	N.	S.W.	N.		0 35	3 5	

FEBRUARY, 1889.

Date.	Barom.	Solar radiation.	Max. Min.	Hygrometer		Wind.		Amount of water Eng. ins.	GENERAL DESCRIPTION.
				Dry bulb.	Wet bulb.	Up Cur.	Val. wind.		
1 24 83.8		58	38	38 5	36	S.	S.	—	Cloudy with snow and rain.
2 24 56.2	100 5	48 5	32 5	40	38	S.W.	S.a.m. N p.m.	—	Cl'dy, showers of rain and snow till 1 p.m. Gleams of sun. p.m.
3 24 230	109 5	34	10	33	32	S.W.	N.	1 5	Cloudless till 11 a.m., then sun sometimes obscured by clouds.
4 24 215	40	24 5	9	21	18	O.	N.	—	Cloudy. Mod. breeze.
5 24 675	70 5	21	14	20	18 5	N.E.	N.	—	Sunshine and clouds. Mod. breeze.
6 24 666	72	22	-4	21	20	N.E.	N.	0 75	Cloudy.
7 24 664	115	37	0	33	30	W.	N.	0 1	Sunshine and clouds. Snow in the evening.
8 24 582	112 5	34	13	25	20	S.E.	N.	2 5	Cloudless save some cumulus.
9 24 168	76 5	30	11	12 5	12 5	N.	N.	0 15	Cloudy with snow. Some gleams of sunshine p.m. Strong wind.
10 24 518	41	16	10	15	14	S.	N.	0 12	Cloudy with snow till 3-30 p.m., then clearing up.
11 24 470	62	29	5	13	12	S.W.	S.	0 2	Cloudy with snow.
12 24 512	97	22	12	16	15	N.E.	N.	—	Sunshine and clouds. Mod. breeze.
13 24 700	96	14	-0 5	11	10	N.E.	N.	—	Constant sunshine, but sky not cloudless.
14 24 618	81	26	-12	24 5	24	N.	S.	0 25	Cl'dless to a.m., some cumulus. Cl'dy 2 p.m. Snow in the evening
15 24 338	84	33	21	32	21	N.W	N.	0 24	Sunshine and clouds. Evening cloudless.
16 24 931	88	28	16	26	24	W.	N.	—	Cloudy with gleams of sunshine a.m. Evening cloudless.
17 24 969	45	29	6	26	25	N.W	S.	2	Snow.
18 25 252	69	37	21	36	32 5	S.W.	S.	8	Snow till 1 p.m., then cloudy.
19 25 167	130	51	16	41	39 5	S.W.	N.	—	Cloudless till 1 p.m., then sun sometimes obscured by clouds.
20 24 747	76	39	17 5	34	32	O.	N.	9 25	Snow.
21 24 382	50 5	29	12	23	21	O.	N.	4	Snow.
22 24 568	86	23	2	16	12	S.W.	N.	—	Cl'dy, gleams of sun. and slight snow-showers p.m. Mod. breeze.
23 24 450	113	26	-7	22 5	20	S.W.	N.	—	Cloudless save some cumulus.
24 24 544	111	28	-13	22	20	N.W	N.	—	Cloudless save some cumulus a.m. Cloudy p.m. Mod. breeze.
25 24 549	126	28	-0 5	27	25	S.W.	N.	—	Sunshine and clouds.
26 24 469	115	33	-0 5	28	27 5	W.	N.	—	Cloudless till 4 p.m., then cloudy.
27 24 274	86	36	-3	35	33	S.E.	N.	3 5	Cloudless morning, then clouding over. Cloudy p.m.
28 24 309	50 5	38	10	26 5	26	S.W.	N.	0 75	Cloudy and snow. Mod. breeze.

MARCH, 1889.

Date.	Barom.	Solar radiation.	Max.	Min.	Hygrometer		Wind.		Amount of water	Snow in Eng. ins.	GENERAL DESCRIPTION.
					Dry bulb.	Wet bulb.	Up Cur.	Val. wind.			
1 24	447 123	32	54	—	26 5	25	S.W.	N.	—	—	Sunshine and clouds.
2 24	508 121	30	5	—	25	24 5	S.	N.	—	—	Sunshine and clouds.
3 24	525 121 5	35	-4	—	31	27	S.E.	N.	—	—	Almost constant sunshine. Moderate breeze.
4 24	678 112	46	-2	—	31	26	S.E.	N.	—	—	Cloudless, save some cumulus.
5 24	771 120	39	0 5	—	31	30	O.	N.	—	—	Cloudless.
6 24	860 130 5	41	-2	—	36	32	S.W. a.m.	N.	—	—	Cloudless, save some cumulus.
7 24	819 124	45	1	—	41	35	N.W. p.m.	N.	—	—	Cloudless, save some cumulus. Moderate breeze.
8 24	711 111	41	5 10	5	36	34	W.	S.	—	—	Sunshine and clouds. Moderate breeze.
9 24	661 109	49	21	40	40	36	S.E.	S.	—	—	Sunshine and clouds. Evening cloudless.
10 24	713 99	48	20	40	40	34 5	S.W.	S.	—	—	Cloudy, with gleams of sunshine. Strong breeze.
11 24	555 120	51	22	49	42	—	S.	S.	0 08	—	Cloudy, with gleams of Sunshine. Rain in the evening.
12 24	742 72	42	30	27	27	27	N.	N.	—	—	Cloudy and snow. Clearing up in the evening. Mod. breeze.
13 24	872 130 5	40	10	35	33	33	W.	N.	0 12	—	Cloudless, save some cumulus.
14 24	775 56	37	13	29	29	—	S.W.	N.	—	3 5	Cloudy. Snow till 3 p.m.
15 24	636 86	28	15	14	10	—	N.W.	N.	—	—	Cloudy and snow. Strong breeze.
16 24	842 110	34	-0 5	9	8	—	N.E.	N.	0 04	—	Sunshine and clouds. Strong breeze.
17 24	932 61	27	-7 5	25	25	—	E.	N.	—	0 75	Sunshine till 8 a.m., then cloudy and snow all day. M. breeze.
18 24	796 130	50	16	49	38	—	S.W.	N.	—	—	Cloudless till 2 p.m., then sunshine and clouds.
19 24	586 126	45	22	42	35	—	S.	S.	—	—	Almost constant sunshine till 4 p.m., then cloudy. Strong breeze.
20 24	373 112	45	52	42	35	—	S.	S.	0 43	5 5	Clouds and sunshine. Snow in the evening. Strong breeze.
21 24	253 129	49	14 5	43 5	35	—	S.W.	N.	—	—	Cloudless, save some cumulus, till 1.30 p.m., then sun. and clouds.
22 24	525 126	42	13	38	33	—	N.E.	N.	—	—	Sunshine and clouds.
23 24	935 99	38	19	32	31	—	N.	N.	—	—	Cloudless till 8.30 a.m., then sunshine and clouds.
24 25	633 116	40	14	37	33	—	N.E.	N.	—	—	Sunshine and clouds. Moderate breeze.
25 24	915 117	43	21	40	35	—	N.W.	N.	0 05	0 75	Cloudy, with showers of snow. Moderate breeze.
26 24	547 66	36	22	34	32	—	N.	N.	0 03	0 75	Cloudy, with showers of snow.
27 24	635 59	35	21 5	30	30	—	N.W.	N.	0 02	0 5	Cloudy, with snow showers. Gleams of sunshine p.m. S. breeze.
28 24	871 85	33	22	30 5	28	—	N.	N.	0 1	1 25	Cloudy, with snow showers. Mod. breeze.
29 25	002 118	39	10	35	33	—	N.W.	N.	—	—	Cloudless till 8 a.m., then sunshine and clouds.
30 24	995 72	35	11	32 5	32 5	—	N.	N.	0 18	0 75	Snow. Moderate breeze.
31 24	747 131	45	30	42	37	—	E.	N.	—	—	Cloudy till 7 a.m., then clearing up. Almost const. sunshine p.m.

A COMPARATIVE WEATHER TABLE OF PAU IN THE PYRENEES.

REGISTER of Weather Table at Pau, prepared by Dr. Otley of Pau. The following tables will, we think, be found useful, as they afford data from which a pretty clear conception may be formed of the character of the Pau climate in winter, as compared with that of S. of England, as represented by Greenwich and Kew, and of Davos, as represented by our own tables. In Table I. the *average* climate of each month at Pau, from October to May inclusive, is compared with the *average* climate as registered at Greenwich Observatory:—

I.—AVERAGE WEATHER TABLE.

Showing the average state of the weather in each month of the winter season at Pau, from eight years' observations, and at Greenwich from thirty-four—

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.
Calculated mean temp. of each month, - -	Greenwich, 50 4 Pau, 56 5	43 6 46 9	39 4 42 5	36 4 40 5	38 8 43 2	42 0 47 9	46 8 53 3	53 7 57 5
Mean of the lowest temp. of each twenty-four hours in the month, -	Greenwich, 42 2 Pau, 49 6	38 7 41 0	32 3 37 1	28 5 35 1	32 3 36 9	35 3 41 3	40 4 46 6	48 8 49 6
Mean of the temp. at 9 A.M. daily, - -	Greenwich, 50 2 Pau, 57 1	43 8 45 6	38 5 40 3	37 8 38 9	37 3 41 8	40 8 48 0	47 3 54 8	55 6 58 0
Mean of the highest temp. of each day, -	Greenwich, 55 5 Pau, 64 9	49 8 54 4	44 5 48 1	44 2 47 1	43 9 50 4	47 1 56 1	50 9 62 2	57 9 64 9
Mean humidity of the air at 9 A.M. Saturated air taken as 100.	Greenwich, 92 0 Pau, 80 0	94 0 81 0	94 0 83 0	94 0 82 0	91 0 81 0	87 0 79 0	84 0 73 0	79 0 74 0

GENERAL VIEW OF METEOROLOGICAL CONDITIONS

The following interesting data have been compiled from the detailed

	CLOUDLESS DAYS.			CONSTANT SUN- SHINE BUT SKY NOT ABSOLUTELY CLOUDLESS.			CLOUDS AND SUN- SHINE ALTERNATELY.		
	1879 to 1880	1880 to 1881	1881 to 1882	1879 to 1880	1880 to 1881	1881 to 1882	1879 to 1880	1880 to 1881	1881 to 1882
August,	3 (from 16th)	—	5	6 (from 16th)	—	11	1 (from 16th)	—	3
September,	6	—	3	8	—	7	9	—	8
October,	20	6	0	2	1	5	3	19	14
November,	5	10	9	3	4	11	4	11	7
December,	15	9	10	5	5	3	5	8	12
January,	16	11	18	5	4	4	4	14	8
February,	8	9	17	6	5	2	9	9	6
March,	16	11	13	6	3	3	4	9	9
April,	—	—	5	—	—	7	—	—	12
	89	56	80	41	22	53	39	70	79
	From 16th Aug., 1879, till 31st March, 1880.	From 1st Oct., 1880, till 31st March, 1881.	From 1st Aug., 1881, till 30th April, 1882.	From 16th Aug., 1879, till 31st March, 1880.	From 16th Oct., 1880, till 31st March, 1881.	From 1st Aug., 1881, till 30th April, 1882.	From 16th Aug. 1879, till 31st March, 1880.	From 1st Oct., 1880, till 31st March, 1880.	From 1st Aug., 1881, till 30th April, 1882.

N.B.—The frequent absence of the observer, during a portion of the year, having caused

FOR THREE YEARS AT DAVOS-PLATZ.

observations taken in the years 1879, 1880, 1881, and 1882.

CLOUDY DAYS.			DAYS WHEN THERE WERE SHOWERS OF RAIN OR SNOW.			WET OR SNOWY DAYS.			WINDLESS DAYS.			DAYS WITH COMPLETE SATURATION.		
1879 to 1880	1880 to 1881	1881 to 1882	1879 to 1880	1880 to 1881	1881 to 1882	1879 to 1880	1880 to 1881	1881 to 1882	1879 to 1880	1880 to 1881	1881 to 1882	1879 to 1880	1880 to 1881	1881 to 1882
I (from 16th) 0	—	5	0 (from 16th) 4	—	11	0 (from 16th) 3	—	1	11 (from 16th) 18	16	8	0 (from 16th) 1	0	0
0	0	2	3	5	7	3	0	3	24	16	2	2	0	3
5	1	0	6	3	2	7	1	1	19	23	25	10	0	0
0	2	0	5	6	5	1	1	1	23	27	24	5	0	0
1	0	0	1	1	1	4	1	0	29	26	21	0	0	0
0	0	0	4	2	1	2	3	2	21	24	16	0	0	0
0	2	1	4	3	5	2	3	0	17	18	11	0	0	0
—	—	1	—	—	5	—	—	0	—	9 up to 13th Ap	10	—	0 up to 13th Ap	0
7 From 16th Aug., 1879, till 31st March, 1880.	5 From 1st Oct., 1880, till 31st March, 1881.	9 From 1st Aug., 1881, till 30th April, 1882.	27 From 16th Aug., 1879, till 31st March, 1880.	20 From 1st Oct., 1880 till 31st March, 1881.	48 From 1st Aug., 1881, till 30th April, 1882.	21 From 16th Aug., 1879, till 31st March, 1880.	9 From 1st Oct., 1880, till 31st March, 1881.	9 From 1st Aug., 1881, till 30th April, 1882.	162 From 16th Aug., 1879, till 31st March, 1880.	166 From 1st Aug., 1880, till 15th April, 1881.	126 From 1st Aug., 1881, till 30th April, 1882.	18 From 16th Aug., 1879, till 31st March, 1880.	0 From 1st Aug., 1880, till 15th April, 1881.	3 From 1st Aug., 1881, till 30th April, 1882.

irregularity in taking Observations, it has been considered better to omit those months.

MEMORANDA.

BEFORE leaving for Switzerland, obtain a passport. It may not be wanted, but it is useful, and no traveller ought to go to the Continent without one. Application for Foreign Office passports should be made in writing, addressed—

THE CHIEF CLERK,

Foreign Office,

LONDON.

The word *Passport* must be legibly written on the outside left-hand corner of the envelope. The fee is *two shillings*, and if the application is not made personally the amount must be enclosed by Post Office order, *not in stamps*, made payable at Charing Cross Post-Office to Chief Clerk of the Foreign Office. A large envelope, properly stamped for the return of the passport, must be sent, together with the certificate that the applicant is a British subject. This certificate can be obtained from your clergyman, banker, lawyer, or any other respectable person.

N.B.—It is not generally known that every gendarme, garde de paix, or public official, is empowered to ask to see a foreigner's passport at any moment. In Germany, France, and Switzerland, this power has fallen into abeyance; but still, a too over zealous public servant does sometimes exercise his authority; and if the traveller should not happen to be provided with the necessary document, he may be put to a great deal of annoyance. Therefore get a passport by all means.

Travellers should ask the landlords of the hotels at which

they stay to settle for cab fares and portorage of luggage. It will save annoyance.

As far as Bale, French is chiefly spoken. After that, German; but nearly all the hotel proprietors and waiters understand English, and at the principal railway stations there is an interpreter. Ask for him in case of dispute, and if you don't know the language. Many of the conductors of the trains speak a little English.

Civility to all officials and servants with whom you come in contact will ensure civility in return. Foreigners are very punctilious, and sensitive on points of honour.

The speed of all trains on the Continent is very much lower than on our own railways. This is especially the case on Swiss lines.

Swiss carriages are well warmed in winter. Fares are very reasonable, but the charges for luggage very high.

Telegraphing in Switzerland is cheap. When you reach Bale, telegraph to the proprietor of the hotel you select in Ragatz, Landquart, or Davos-Platz, and tell him to have a fire in your bedroom. This is important. A fire for the night will cost you a franc to two francs.

Port wine and sherry are generally execrable. Don't order them.

At the principal hotels in Davos, the proprietors take cheques from their visitors. The rate of exchange varies from ten centimes to thirty (or threepence) on the pound.

English bank-notes or circular notes are most useful, being current everywhere.

Before leaving London, provide yourself with some French money for use on the journey. Some of it in half francs.

If you object to smoking, ask the guard to put you into a non-smoking carriage. Nearly all Continental lines provide special compartments for ladies.

Never offer *sovereigns* at booking-offices, as you are very apt to receive change for a napoleon (20 francs) only.

All cab drivers on the Continent expect a small fee over their fare. It is called a *pour boire*. From twenty to thirty centimes is plenty.



LETTER TO THE EDITOR.



WE have received the following letter from Mr. J. C. Coester, proprietor of the Hotel Belvedere in Davos. and we think it only fair to that gentleman to publish it in its entirety. We are glad to notice that the remarks we made in the first edition of this work, on the subject to which Mr. Coester alludes, have been the means of ventilating what has hitherto been "a hole and corner" proceeding, and we reiterate our previously expressed opinion that landlords of hotels in invalid resorts should clearly state the charge that will be made for clothes and bedding in the event of death; and not in the sad hour of bereavement still further add to the sorrow of relatives by suddenly presenting them with an unexpected bill for a sum varying from £12 to £40 for bed and bedding—the latter sum being almost as frequently charged in *some* places as the former:—

TO THE EDITOR OF THE "J. E. M." GUIDE TO DAVOS-PLATZ.

Regarding "the charge that is made to the relatives of a deceased person for the bed and bedding upon which the death takes place," your statement, I regret to say, seems to me not correct. I do not know how much is charged in the other hotels in Davos, but as regards my own I can give you the following exact figures of all such charges made since the opening of it:—No. 1, £2 0s. 10d.; No. 2, £8 12s. 0d.; No. 3, £8; No. 4, £11 16s. 0d.; No. 5, £10 9s. 2d.; No. 6, £8 12s. 0d.; No. 7, £10 8s. 0d.; No. 8, £10 5s. 2d.; No. 9, £8 4s. 0d.; No. 10, £10 16s. 0d.; No. 11, £13 5s. 7d.; No. 12, £17 0s. 0d.; (N.B.—Nos. 11 and 12: All the things have been burned according to the Doctor's advice.) You will see by this list that since the opening of my hotel, in July, 1875—viz., during a period of seven years, twelve patients have died in the house, and the highest sum reckoned for bedding and bed-clothes (the bedstead being *never* charged for) is £17, and the lowest £2 0s. 10d., and the average of all the payments is £9 19s.

As you will observe, there is no fixed charge, but in every case the amount demanded is the exact value of the bedding and bed-clothes

which were used by the deceased patient. The paid-for articles *become the property of the person who pays for them*, and he may dispose of them as he thinks fit. Sometimes they are sent to any address indicated, but generally they are given to poor people in the village, when an official receipt is delivered by the magistrate of Davos. Regarding your sentence "as to whether the charge is fair or not, we offer no opinion," I may perhaps be allowed to suggest that the charge *is a fair one*. It is impossible (as far as my hotel experience and my knowledge of human nature goes) to expect people to sleep in bedding and bed-clothes in which former patients have died, although they may be thoroughly disinfected, and you could scarcely expect the landlord to do away with the bedding and bed-clothes at his own expense.

J. C. COESTER,

Proprietor Hotel Belvedere,

DAVOS-PLATZ.



VOCABULARY.

For the use of travellers who do not speak German, we append a few simple words and phrases, such as are likely to be found necessary during the journey :—

ENGLISH.	GERMAN.
Breakfast	Das Frühstück
Dinner	Das Mittagessen
Luncheon	Das Gabelfrühstück
Soup	Die Suppe
Boiled Meat	Gekochtes Fleisch
Roast Meat	Gebratenes Fleisch
Beef	Ochsenfleisch
Roast Beef	Ochsenbraten
Veal	Kalbfleisch
Veal Cutlets	Kalb's Cotelettes
Mutton	Hammelfleisch
Ham	Schinken
Eggs	Eier (an egg—ein Ei)
Butter	Die Butter
Cheese	Der Käse
Potatoes	Die Kartoffeln
Water	Das Wasser
Beer	Das Bier
Hock	Der Rheinwein
Coffee	Der Kaffee
Tea	Der Thee
Milk	Die Milch
Cream	Die Sahne Der Rahm
Chocolate	Die Chocolate
Lemonade	Limonade
Mineral Water	Mineral Wasser

NUMBERS.

One	Ein
Two	Zwei
Three	Drei
Four	Vier
Five	Fünf
Six	Sechs
Seven	Sieben
Eight	Acht

ENGLISH	NUMBERS.	GERMAN.
Nine	Neun	
Ten	Zehn	
Eleven	Elf	
Twelve	Zwölf	
Thirteen	Dreizehn	
Fourteen	Vierzehn	
Fifteen	Fünfzehn	
Sixteen	Sechszehn	
Seventeen	Siebzehn	
Eighteen	Achtzehn	
Nineteen	Neunzehn	
Twenty	Zwanzig	
ORDINAL NUMBERS.		
The First	Der Erste	
The Second	Der Zweite	
The Third	Der Dritte	

The reader will be struck with the similarity between the English and the German words in many instances.

In German *every letter* is sounded and has its value, so that *Erste* is pronounced as near as possible *Erster*.

ENGLISH.	PHRASES.	GERMAN.
I am tired	Ich bin müde	
I am thirsty	Ich bin durstig	
I am much obliged to you	Ich bin Ihnen sehr verbunden	
Is dinner ready ?	Ist das Mittagessen fertig ?	
Is it time to go ?	Ist es Zeit abzureisen ?	
What time is it ?	Wie viele Uhr ist es ?	
How many miles is it ?	Wie viel Stunden sind es ?*	
Are there any letters for me ?	Sind Briefe für mich da ?	
It is not enough	Das ist nicht genug	
I will not have any wine	Ich will keinen Wein	

* It must be understood that the distance in *time* is here asked for, and not in miles. One *Stunde* is one hour's walking. The German *Stunde* (plural *Stunden*) implies 3 to 4 English miles. The German mile (*Meile*) is two hour's walking or, from 6 to 8 English miles.

PHRASES.

ENGLISH.	GERMAN.
Go away	Gehen Sie weg
Come here	Kommen Sie hieher
Make haste	Beeilen Sie sich
Shut the window	Schliessen Sie das Fenster
Open the door	Oeffnen Sie die Thür
Brush my clothes	Bürsten Sie meine Kleider
Give me a glass of water	Geben Sie mir ein Glass Wasser
Call me at — o'clock	Wecken Sie mich um — Uhr
Show me the way	Zeigen Sie mir-den Weg
This morning	Diesen Morgen
This afternoon	Diesen Nachmittag
This evening	Diesen Abend
It is very dirty	Es ist sehr schmutzig
Have you any silver	Haben Sie Silbergeld
I want change for a Napoleon	Ich brauche kleines Geld für ein Zwanzig Frank Stück
Can you change me a sovereign ?	Können Sie mir ein Fünf und Zwan- zig Frank Stück wechseln
Please, which is the way to go ?	Ich bitte Sie, welcher Weg führt nach ?
Is this the right way ?	Ist dies der rechte Weg
Good morning to you	Ich wünsche Ihnen guten Tag
When will breakfast be ready ?	Wann wird das Frühstück fertig sein ?
I prefer coffee	Ich ziehe den Kaffee vor
I shall take a roll	Ich werde ein Brödchen nehmen
What time do we dine to-day ?	Um welche Zeit essen wir heute ?
Waiter, can you show me a good room and clean bed ?	Kellner, können Sie mir ein anstän- diges Zimmer und ein sauberes Bett anweisen ?
Have my luggage carried up	Lassen Sie mein Gepäck sogleich herauftragen
Bring me some fresh water, please	Bringen Sie mir frisches Wasser, bitte
At what o'clock does the train leave for — ?	Um wie viel Uhr geht der Bahnzug nach — ?
Bring me some matches, please	Bringen sie mir Zündhölzchen, bitte

ENGLISH.	PHRASES.	GERMAN.
Have a fire made in my room, please	Lassen Sie in meinem Zimmer Feuer machen, bitte	

Feuer in German is pronounced as nearly as possible like the English word *fire*.

Good night, sir	Gute Nacht, mein Herr
Who knocks at the door?	Wer klopft an die Thüre?
How much do you ask for it?	Wie viel verlangen Sie dafür?
Is the bed good?	Ist das Bett gut?
Can I have warm water?	Kann ich warmes Wasser zum Waschen haben?
Is the bed clean?	Ist das Bett reinlich?
I have my passport	Ich habe meinen Pass
What are your prices?	Was sind Ihre Preise?
Send for a cab, please	Lassen Sie einen Wagen holen, bitte
Where is the luggage booking-office, please?	Wo ist die Gepäckannahme, bitte?
Please to give me one (two) first-class tickets to —	Ich bitte, um ein (zwei) Billet (s) erster Classe nach —
What do they cost?	Wie viel kosten sie?
Where is the first-class waiting-room, please?	Wo ist der Wartsaal erster Classe, bitte?
Is this train for —?	Ist dies der Zug nach —?
Open the door of this carriage for me, please	Oeffnen Sie mir diesen Wagen, bitte
Thank you	Ich danke

N.B.—It is necessary to remember that the German *W* is always pronounced like our *V*. Therefore, *Wiesen*—would be *Viesen*. *Wasser*—*Vasser*. *Wo* (where) *Vo*. *Z* has the dental sound of *ts*. If these hints are borne in mind, even a person who essays German for the first time, may make himself understood with any of the above words or phrases.

All German substantives and other words employed substantively begin with a CAPITAL letter.

LIST OF HOTELS AND PENSIONS, &c.,
IN DAVOS-PLATZ.

ENGLISH.

GRAND HOTEL AND PENSION BELVEDERE.

HOTEL D'ANGLETERRE.

HOTEL VICTORIA.

HOTEL BUOL.

GERMAN.

THE KURHAUS (chiefly).

HOTEL RHÄTIA.

HOTEL AND PENSION STRELA.

SCHWEIZERHOF.

SANATORIUM.

HOTEL ZUR POST.

DAVOSERHOF

PENSION EISENLOHR.

PENSION GARRE.

PRIVATE APARTMENTS.

HOUSE BEECK.

VILLA COLLINA.

VILLA FÜRSTENAU.

VILLA LAMBERTA.

HOUSE MOROSANI.

HOUSE SCHWABE

and many others.

DAVOS-DORFLI.

GERMAN.

KURHAUS-DOERFLI.

PENSION GREDIG.



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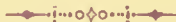
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The "J.E.M." Guide to Switzerland.

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Opinions of the Press.

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The "J.E.M." Guide to Switzerland

excellent maps, route maps, plans and panoramic views of the mountains, enlivened with special history articles, very interesting, and full of useful information for general tourists, more than one hundred different routes being detailed, besides which, France, Germany, Italy, the Black Forest, and the Riviera are added. The vocabulary and large index complete one of the best and most descriptive books of the kind ever published."

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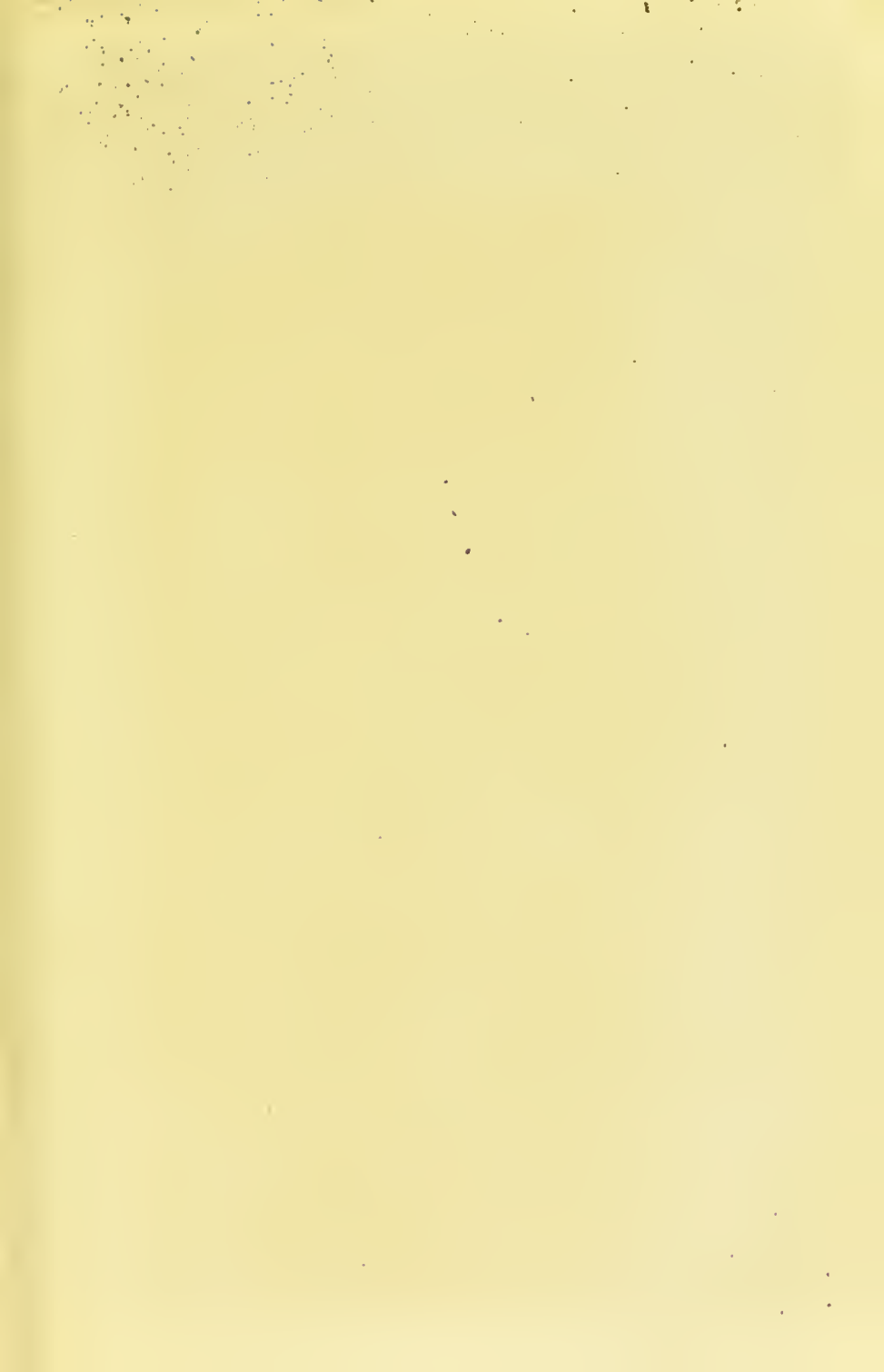
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